Dictionary of Aviation

second edition
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Dictionary of Aviation

second edition

David Crocker

A & C Black • London

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Preface

English is the universal language of communication used in civil aviation. This dictionary provides the basic vocabulary of terms used by pilots, cabin staff, maintenance crews, ground staff and travellers worldwide. The terms are those used in everyday work on aircraft, and cover parts of the aircraft, manipulating the aircraft on the ground and in the air, instructions to passengers, conversations with air traffic control, weather, emergencies, etc.

Unlike conventional aeronautical dictionaries, the Dictionary of Aviation defines vocabulary often found in conjunction with the purely technical terms as well as the technical terms themselves. Simple explanations are presented in simple language, making the dictionary ideal for those working towards a private or commercial pilot’s licence, as well as trainee maintenance engineers and more experienced professionals. We also give examples to show how the words are used in context.

We have selected quotations from various specialised magazines to show the words and phrases as they are used in real-life situations. The supplements at the back give further information in the form of tables.

We are particularly grateful to the staff at Qatar Aeronautical College for their help in the production of the first edition of this dictionary. Thanks are also due to Stephen Copeland and Gavin Rowden for specialist advice and helpful suggestions during the preparation of this new edition.

The information contained in this dictionary is not to be regarded as a substitute for formal training in a given discipline.
Pronunciation Guide

The following symbols have been used to show the pronunciation of the main words in the dictionary.

Stress is indicated by a main stress mark (') and a secondary stress mark (,).

Note that these are only guides, as the stress of the word changes according to its position in the sentence.

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AAIB abbreviation Air Accident Investigation Branch
AARA abbreviation air to air refuelling area
abbreviate /əˈbrɛvɪət/ verb to shorten a word or a text. Air Traffic Control is usually abbreviated to ATC.
abbreviated weather report a shortened weather report
abbreviation /ə,briˈviət(ə)n/ noun the short form of a word or text. Kilometre.
COMMENT: Abbreviations can cause confusion. They may range from those which have a very specific meaning as defined by an authoritative body, to others which may come about because of personal usage in note-making, etc. ICAO approved abbreviations may differ from those used in JARs. AC can mean ‘alternating current’ or ‘altocumulus’. CPL is generally taken to mean Commercial Pilot’s Licence but the ICAO definition is Current Flight Plan. Advances in technology have significantly increased the number of abbreviations with which pilots and engineers must be familiar. Abbreviations in this dictionary include those with generally accepted definitions and others with specific ICAO definitions.
ability /əˈbɪlɪti/ noun the power, knowledge or skill needed to do something. Strength is the ability of a material to support a load. He has great ability. He has good skills or is very clever.
able /ˈeɪbl/ adjective skilful and competent. To be able to have the power, knowledge, skill or strength to do something. Is she able to carry this heavy suitcase?
able-bodied /ˈeɪblbɒdɪd/ adjective referring to a person who has no physical disabilities. Physically disadvantaged as well as able-bodied people can gain a PPL.
abnormal /æbˈnɔːm(ə)l/ adjective not normal
abnormality /æbˈnɔːmlɪtɪ/ noun something that is not normal, expected or correct, and is therefore possibly worrying. Any abnormality in engine performance should be checked.
abnormal load /æb,ˈnɔːmləd/ noun a load which is heavier than normal.
abort /ˈæbɔːt/ verb 1. to stop something taking place. They had to abort the landing because of a violent storm. 2. to end something before it has finished.
absolute /ˈæbsəluːt/ adjective complete, total. Absolute necessity: something that you cannot manage without under any circumstances. Absolute silence: a condition in which no sound of any kind can be heard.
absolute ceiling /ˈæbsəluːt ˈsiːlɪŋ/ noun the maximum height above sea level at which an aircraft can maintain horizontal flight.
absolute humidity /ˈæbsəluːt ˈhjuːmətɪərɪti/ noun the vapour concentration or mass of water in a given quantity of air.
Absolute pressure

**Absolute pressure** /ˌæbsəlut/ noun a unit of force per unit of area without comparison to other pressure. *Aircraft show absolute pressure in inches of mercury on the inlet manifold pressure gauge.*

**Absolute value** /ˌæbsəlut 'vælju:/ noun the size or value of a number regardless of its sign. *(The absolute value of -64.32 is 64.32.)*

**Absolute zero** /ˌæbsəlut 'ziərəu/ noun the lowest temperature possible, 0 °K, or -273.15 °C.

**Absorb** /əbˈzɔːrb/ verb to take in. *Warm air absorbs moisture more easily than cold air.* *(Our bodies absorb oxygen.)*

**Absorption** /əbˈzɔːpʃən/ noun the act of taking something in. *(There is absorption of energy by the tyre when the aircraft lands.)*

**AC** abbreviation 1. alternating current 2. air communications (ICAO)

**ACARS** abbreviation airborne communication, addressing and reporting system

**ACAS** /ˈɛkəs/ abbreviation airborne collision avoidance system

**ACC** abbreviation area control centre

**Accelerate** /ækˈseɪlreɪt/ verb to increase speed. *(After start-up, the engine accelerates up to idling speed.)*

**Acceleration** /ækˈseɪleɪʃən/ noun 1. the act of increasing the speed of something or of going faster. Opposite decelerate 2. a force that pulls outwards and is caused by a change in direction rather than a change in speed. *(Acceleration forces can be felt during aerobatic manoeuvres.)*

**Acceleration due to earth’s gravity** noun the pulling force exerted on a body by the Earth. It has an international standard value of 9.80665 metres per second per second. Abbreviation g

**Accelerometer** /ˌækˈseɪləˌmetər/ noun an instrument that measures an aircraft’s acceleration

**Accept** /əkˈsept/ verb 1. to be able to take or receive. *(Some units accept electrical inputs from the autopilot.)* 2. to take or receive something when it is given to you. *(She accepted the award on behalf of the whole crew.)*

**Acceptable** /əkˈseptəbl/ adjective allowed or approved of, although it may not be perfect. *(Acceptable level of safety)*

**Acceptance** /əkˈseptəns/ noun 1. willingness to believe something or agree to something. *(There is a growing acceptance that safety is the main priority.)* 2. willingness to do or use something. *(Acceptance of new technology)*

**Access** /əkˈses/ noun a way to find or get at something. *(To access data)*

**Area control centre** /ˈɛrə kənˈtɹɪntʃər/ noun the 24-hour air traffic control centre responsible for airspace that is in a geographical area. *(It is under the control of the United States Air Force.)*
accessibility  /əkˈsesəbɪlɪti/ noun the ease with which something can be reached or found.  Accessibility of components and equipment during servicing enables work to be done more quickly.

accessible  /əkˈsesəb(ə)l/ adjective easy to get at.  It is a good idea to have a set of emergency charts in an accessible place in the cockpit.  Instruments which need resetting in flight must be accessible to the crew.

accessory  /əkˈsesəri/ noun a system or piece of equipment of secondary importance.  There are many accessory systems which need engine power to operate them – pumps, generators, magneto etc.  (NOTE: The noun accessory is not connected with the noun access or the verb to access.)

access panel  /ˈɛkses pənəl/ noun a part of the aircraft skin which can be easily removed so internal components can be inspected.

accident  /ˈɛksɪdənt/ noun 1. something which happens which seems to have no cause.  It was an accident nobody planned that it should happen or deliberately caused it to happen.  by accident by chance we met by accident we met by chance 2. an unfortunate or harmful event, something causing damage.  An accident must be reported.  The flight attendant was injured in the accident.

‘Mr Skidmore lost both arms in an accident while serving in the army as a young man, and is believed to be the first pilot in the UK – and possibly the world – to go solo with two artificial arms.’  [Pilot]

accidental  /əkˈsesəd(ə)nt(ə)l/ adjective 1. happening by accident, not deliberate or planned.  There is a safety device to prevent accidental retraction of the undercarriage.  2. relating to an accident, or happening as a result of an accident.  We were told of his accidental death.

accompanied  /əkˈmæp(ə)nid/ adjective found together with.  Accompanied luggage luggage which belongs to one of the passengers and is carried on the same aircraft.

accompanied luggage  /əkˈmæp(ə)nidˌlʌɡˈriːdʒ/ noun luggage which belongs to one of the passengers and is carried on the same aircraft.

accomplish  /əkˈmæplʃ/ verb to go together with something else.  Engine failure is sometimes accompanied by fire.

accompanied by his wife and children on the flight to New York  Mr Smits was accompanied by his wife and children when he flew on the flight.

accomplish  /əkˈmæplʃ/ verb (in formal technical texts) to do something.  Feathering is accomplished by moving the pilot’s control lever.

accomplishment  /əkˈmæplʃ(ə)mənt/ noun 1. an achievement.  Charles Lindbergh’s flight across the Atlantic in May 1927 was a great accomplishment.

accomplishment of secondary importance  noun 2. (in physics) work done.  Power is measured by units of accomplishment correlated with time.

accordance  /əkˈɔrdəns/ noun in accordance with instructions or laws.  Fuels must be used in accordance with instructions.

accordance with Buys Ballot’s Law  as described by Buys Ballot’s Law.

accordingly  /əkˈɔrdɪŋli/ adverb as needed.  Check for increasing manifold pressure and reduce power accordingly.

according to /əkˈɔrdɪŋ tju/ preposition 1. as determined by or in relation to.  The force exerted by the pilot on the control column will vary according to a number of factors.

according to instructions  exactly as...
said in the instructions as required
account /əˈkaʊnt/ noun 1. to take something into account to remember something and consider it carefully.
account for /əˈkaʊnt fə/ verb 1. to make up or constitute. Kevlar and carbon fibre account for a large percentage of the materials used in modern aircraft. 2. to provide the main reason for something.
account under no circumstances, never.
On no account should anybody fly an aircraft without carrying out pre-flight checks.
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accurate /ˈækjʊrət/ adjective 1. correct. Still in accurate flying can only be achieved by practice. 2. precise. This watch is very accurate.

ACFT abbreviation aircraft
achieve /əˈʃiːv/ verb 1. to manage to do something demanding. In order to achieve a safe landing in a crosswind, the correct techniques must be used. 2. to obtain. In wind shear conditions, a fly-by-wire system allows the pilot to achieve maximum lift by pulling hard back on the stick without risk of a stall.

achievement /əˈʃiːvəmənt/ noun 1. something difficult that somebody succeeds in doing and feels proud about. For most trainee pilots, making their first solo flight is a great achievement.

acid /ˈæsɪd/ noun 1. a chemical substance which reacts with a base to form a salt. Sulphuric acid (H₂SO₄) (NOTE: An acid turns a litmus indicator red and has a sour taste.)

acidity /əˈsɪdɪtɪ/ noun 1. having an acid content. The acidity of a substance is the amount of acid in a substance.

acid-proof /ˈæsɪd prɔːft/ adjective 1. able to resist the harmful effects of an acid.

acid test /ˌæsɪd ˈtest/ noun 1. a difficult or exacting test of worth or quality. A pilot’s ability to react appropriately in an emergency situation is the acid test of his or her professionalism.

ACMS noun a computer which records information from various aircraft systems during flight. Full form aircraft condition monitoring system

ACFT abbreviation aircraft classification number

acoustic /əˈkʊstɪk/ adjective referring to sound

acoustic ear muffs /əˌkʊstɪk ˈɜːr ˌmʌfs/ plural noun coverings to protect the ears from loud noise. Also called ear protectors, ear defenders.

acquire /əˈkwɔːr/ verb to buy or otherwise obtain. To acquire a new air-

The accuracy of modern navigational equipment is much greater than older systems.

something and consider it carefully.
active runway /ˈæktɪv ˈrænwaɪ/ noun a runway that is being used

...never cross an active runway without permission from the tower: there may be more than one active runway' [Civil Aviation Authority, General Aviation Safety Sense Leaflet]

activity /ˈækˈtɪvəti/ noun a movement or action of some kind o Sunspot activity can affect the amount of solar radiation.

actual /ˈækʃjuəl/ adjective real o The actual path of the aircraft over the ground is called its track, which may not be the same as the desired course.

actually /ˈækʃjuəli/ adverb in fact, in reality o The design is such that, although the aircraft loses altitude rapidly, it does not actually stall.

actuate /ˈækʃjuət/ verb 1. to move a device or a part o The fore and aft movement of the control column actuates the elevators. 2. to switch on a system or a piece of equipment, or put it into operation o A lever actuates the fire deluge system. 3. to put a procedure into action o Receipt of the distress signal will actuate the support facilities at the airport.

actuation /ˈækʃjʊəʃən/ noun 1. the act of making a device or a part move o Electrical actuation the use of an electric motor to make something move o Mechanical actuation the use of a mechanical part such as a rod, arm or lever to make something move 2. a movement made by a device or part

actuator /ˈækʃjuətər/ noun a device which changes electrical or hydraulic energy into mechanical motion o The actuator control is sensitive to engine rpm. o Actuators are classified as either linear or rotary.

AD abbreviation airworthiness directive

A/D abbreviation aerodrome

Ada abbreviation advisory airspace

adapt /ˈsədʒpt/ verb 1. to change or modify for special use o The turboprop engine is often used in transport aircraft and can be adapted for use in single-engine aircraft. 2. to change to suit
adaptation
6
new conditions ○ Crew flying long-haul routes have to adapt to time changes.
adaptation /ad′ep-tən/ noun 1. the act of changing or modifying something for special use ○ Doppler VOR is an adaptation of VOR to reduce errors caused by location. 2. adjustment to new conditions ○ Adaptation to time changes when travelling west to east takes time.
adapter /′æd-pət/ noun 1. a piece of equipment or device which allows a change or modification ○ a ‘T’ piece adapter a device for connecting two inputs to one output or vice versa 2. a device that allows two incompatible devices to be connected
ADC /ei′di/ abbreviation air data computer
add /′æd/ verb 1. to put figures together to form a sum, to make a total ○ Add the two numbers together to find the sum. 2. to put together to make a larger group or a group with different properties ○ There are only nine chairs, add another one. ○ A substance is added to the fuel to clean fuel injectors.
addition /′æd-iʃən/ noun 1. a mathematical operation consisting in putting numbers together ○ Addition is normally taught before subtraction, multiplication and division. ○ The addition sign is +. 2. the act of adding something ○ With the addition of methanol, the turbine inlet temperature is restored. 3. ○ in addition also ○ in addition to as well as
additional /′æd-i-təl/ adjective added or extra
additive /′æd-ıtiv/ noun a chemical substance, often liquid, added to another substance to give it extra qualities ○ Additives are used in engine oils to prolong the life of the engine. ○ Antifreezing additives are used in radiator coolants.
adhere /′ad-hər/ verb to stick as if glued ○ Clear ice adheres strongly to airframes.
adhesive /′ad-hı-siv/ noun glue ○ adhesive tape ○ Adhesive bonding of aluminium parts is widely employed.
ADI /′e-di′a/ abbreviation attitude direction indicator or attitude director indicator
adiabatic /′ədi-ə-bæt/ noun 1. referring to processes through which heat cannot be lost or gained ○ referring to a change in temperature in a mass of air, which occurs when the air is compressed or expanded by an increase or decrease in atmospheric pressure and does not involve the air losing heat to, or gaining heat from, its surroundings ○ adiabatic compression /′ədi-ə-bæt ′ko ′p-rən/ noun compression caused by atmospheric factors, which makes descending air warm up ○ adiabatic expansion /′ədi-ə-bæt ′ko ′sp-rən/ noun expansion caused by atmospheric factors, which makes ascending air cool down ○ Cooling by adiabatic expansion may result in cloud formation.
adiabatic heating /′ədi-ə-bæt ′hıt-ıŋ/ noun a process in which descending air is heated by an increase in atmospheric pressure without heat transfer ○ adjacent /′dʒı-ənt/ adjective next to or near ○ Fire extinguishers should be positioned adjacent to the aircraft during all ground-running operations.
adjust /′dʒı-st/ verb to change and improve the position or setting of a piece of equipment ○ The pilot adjusts the throttle or propeller controls. ○ to adjust the seat to move the seat into a position suitable for yourself ○ to
adjust the volume to increase or decrease the volume to improve the sound quality

adjustable /əˈdʒəstəb(ə)l/ adjective designed to be adjusted ○ An adjustable stop on the throttle control ensures a positive idling speed.

adjustment /əˈdʒənmənt/ noun 1. a change to improve the setting, position or operation of something ○ A slight adjustment to the seat will make it much more comfortable to sit in. 2. the act of changing something to improve its setting or position ○ Maximum system pressure is often controlled by adjustment of the main engine-driven pump.

admit /ədˈmɪt/ verb to allow to enter ○ Cold air can be admitted to the cabin through adjustable louvres or shutters.

adopt /əˈdɔpt/ verb to choose to use something as standard equipment or to make it standard procedure ○ A policy of no smoking on all flights has been adopted by many airlines. ○ widely adopted now in standard use with many companies, institutions and organisations

adoption /əˈdɔpʃən/ noun the act of using something as standard equipment or making it standard procedure ○ In spite of the adoption of the axial flow type compressor, some engines retain the centrifugal type.

ADR abbreviation accident data recorder

ADS abbreviation automatic dependent surveillance

ADT abbreviation approved departure time

advance /ədˈvæns/ noun 1. a change that improves something ○ enormous advances in aircraft design great progress or developments in aircraft design 2. in advance of ○ The Gulf region is three hours in advance of GMT.  ○ verb 1. to move forwards, or move something forwards ○ the throttle lever is advanced the throttle lever is moved forwards 2. to make something happen at an earlier time ○ to advance the ignition to adjust the timing of the ignition so that the spark occurs earlier

advanced /ədˈvænst/ adjective modern and sophisticated ○ The A340 is an advanced type of aircraft.

...a Seattle-based modification company specializing in advanced winglet designs is developing a lightweight winglet for the Boeing 747 200F [Flight International 1–7 May 1996]

advantage /ədˈværntidʒ/ noun a good or beneficial factor ○ The multi-wheel combination has the advantage of smaller and lighter undercarriage structures.  ○ to take advantage of ○ to take advantage of to get benefit from a situation ○ to take advantage of favourable winds to use tailwinds to increase ground speed and thus save time and money. Opposite disadvantage

advantageous /ədˈværntidʒəs/ adjective better ○ the most advantageous ○ The minimum time path is the most advantageous for economy.

advect /ədˈvekt/ verb to move in a horizontal direction due to convection ○ Dispersal of hill fog takes place when surface heating lifts the cloud base or drier air is advected.

advection /ədˈvekʃən/ noun the movement of air in a horizontal direction

advection fog /ədˈvekʃənfɔɡ/ noun fog which forms when warmer moist air moves over a colder surface.

advent /ədˈvɛnt/ noun an arrival, especially of something very important ○ With the advent of satellite navigation systems, pilots of light aircraft have a more accurate means of knowing their position.

adverse /əˈdɜrs/ adjective 1. bad or poor ○ Only in extremely adverse conditions should the crew evacuate the aircraft. ○ adverse handling characteristics aspects of an aircraft’s handling which are poor 2. acting or going against you

adverse yaw /ədˈɜrs jɔ/ noun yaw caused by aileron drag, in the opposite direction to the direction of the intended turn

advice /ədˈvɑrs/ noun useful or helpful information ○ The instructor’s advice was of great help to the student
advisability /ədˈvaɪzəbɪləti/ noun 1. the advisability of something 2. whether something is a good idea or not 3. Flying manuals often contain guidance on the advisability of flying with a cold.

advisable /ədˈvaɪzəbəl/ adjective recommended, suggested 1. It is advisable to check the condition of the tyres after each landing.

advise /ədˈvaɪz/ verb 1. to inform, to notify 2. to recommend, to suggest 3. The flight deck advised the cabin crew that descent would start in 20 minutes. 4. to advise against to recommend or to suggest that something should not be done

advisory /ədˈvaɪzərɪ/ adjective giving advice and information

advisory airspace /ədˈvaɪzərɪ ˈeəspεərs/ noun airspace containing advisory routes in which air traffic control provide an advisory service but not full control. Abbreviation ADA

advisory route /ədˈvaɪzərɪ ˈrʊt/ noun a published route for which there is an advisory service. Abbreviation ADR

advisory service /ədˈvaɪzərɪ ˈsɜrvɪs/ noun a service in which Air Traffic Control provides advice and information to assist a pilot in the safe conduct of a flight

AEEC abbreviation airlines electronic engineering committee

aerate /ˈeərət/ verb to put a gas, especially carbon dioxide or air, into a liquid so that bubbles are formed 1. Aerated fuel causes problems. Opposite de-aerate

aeration /ˈeərəʃən/ noun the act of putting a gas, especially carbon dioxide or air, into a liquid 1. The purpose of the booster pump is to prevent fuel aeration. Opposite de-aeration

aerator /ˈeərətər/ noun a device to put a gas – especially carbon dioxide or air – into a liquid. Opposite de-aerator

aerial /əˈriəl/ adjective 1. happening in the air 2. done by an aircraft in flight 3. a device to send or receive radio or TV signals 4. Ice-covering reduces the effectiveness of aerials. (NOTE: The US English word with this meaning is antenna.)

aerial display /əˈriəl dɪˈspleɪ/ noun a display of flying skills and aircraft performance

aerial photograph /əˈriəl ˈfəʊtəgrəf/ noun photography done from an aircraft in the air

aero- /ˈeɪrəʊ/ prefix 1. referring to the air 2. referring to aircraft 3. aero-engine 4. aero-tow

aerobatic /əˌɛərəˈbætɪk/ adjective referring to aerobatics 1. Loops and rolls are aerobatic manoeuvres.

aerobatic aircraft /əˌɛərəˈbætɪk ˈeəkrəft/ noun an aircraft which is designed to perform aerobatics

aerobatic display /əˌɛərəˈbætɪk ˈdɪsˈpleɪ/ noun a demonstration, often public, of piloting skill and aircraft performance

aerobatics /əˌɛərəˈbætɪks/ noun the art of performing spectacular controlled movements in a flying aircraft for the purposes of entertainment or competition 1. The Russian pilot gave a great display of aerobatics.

aerobatic team /əˌɛərəˈbætɪk ˈtiːm/ noun a team of pilots and aircraft who perform aerobatics

aerodrome /əˌɛərəˈdrɔm/ noun any area of land or water designed for the taking off and landing of aircraft 1. Airports and military air bases or stations are types of aerodrome. 2. All aerodromes are marked on charts. Abbreviation A/D a disused aerodrome an aerodrome which is no longer in use for the purpose of taking off and landing aeroplanes

aerodrome boundaries /əˌɛərəˈdrɔm, ˈbaʊndəris/ plural noun the physical or geographical limits of an aerodrome
aerodrome circuit /əˈɛədrəʊm/ noun the pattern and direction of aircraft movement in the air around the aerodrome
aerodrome QFE /əˈɛədrəʊm ˈkjuː eɪf/ noun the barometric pressure setting at which the altimeter reads zero when the aircraft is on the runway
aerodrome QNH /əˈɛədrəʊm ˈkjuː ˈɛn ɪtʃ/ noun the barometric pressure setting at which the altimeter reads aerodrome elevation when the aircraft is on the runway
aerodrome surveillance monitoring indicator /əˈɛədrəʊmˌsɜːvɪtʃuərənˌmɑnɪˈtɔrɪŋɪndɪˈkɛtə/ noun same as airport surface detection equipment
aerodrome traffic zone /əˈɛədrəʊm ˈtræfɪk ˈzɔːn/ noun an area of protected airspace around an aerodrome, which pilots need permission to enter or to move in. Abbreviation ATZ
aerodynamic /əˌɛərdəʊˈmænɪk/ adjective 1. referring to the way in which objects are affected when they move through the atmosphere 2. referring to a smooth rounded shape which moves easily through the air. Aerodynamic design a streamlined shape that enables something to move easily through the air
aerodynamic braking /əˌɛərdəʊ ˈbremɪŋ/ noun the braking effect of drag
aerodynamic forces /əˌɛərdəʊ ˈfɔːsɪz/ noun the forces of the air which act on an aircraft in flight
aerodynamic resistance /əˌɛərdəʊ ˈrɪznɪs/ noun same as drag
aerodynamics /ˌɛərdəʊˈmænɪks/ noun the science that deals with the interaction of moving objects with the atmosphere. Aerodynamics is one of the major areas of study for a trainee pilot.
aerodyne /əˈɛərdəʊn/ noun an aircraft that is heavier than air and whose lift in flight results from forces caused by its motion through the air, e.g. a plane or helicopter
aero-engine /əˈɛərəˌendʒɪn/ noun an engine used in aircraft. Most piston aero-engines are cooled by air.
aerofoil /əˈɛərəfɒɪl/ noun a surface which is shaped to produce more lift than drag when moved through the air. Wings, ailerons, elevators, fins and propellers are all examples of aerofoils. (NOTE: The US English word is airfoil.)
aeronautical /ˌɛərəˈnæstɪkəl/ adjective referring to aeronautics
aeronautical chart /ˌɛərəˈnæstɪkəl tʃɑːtt/ noun a map used in air navigation which may include topographic features, hazards and obstructions, navigational aids and routes, designated airspace and airports
aeronautical engineer /ˌɛərəˈnæstɪkəlˌendʒɪˈnɪər/ noun an engineer who specialises in the design of aircraft
aeronautical engineering /ˌɛərəˈnæstɪkəlˌendʒɪˈnɪŋ/ noun the science or study of the design of aircraft
aeronautical fixed service /ˌɛərəˈnæstɪkəl fɪksɪd ˈsɜːvɪs/ noun a radio communications service between fixed points that is designed to enable aircraft to travel safely. Abbreviation AFS
aeronautical fixed telecommunication network /ˌɛərəˈnæstɪkəlˌfɪksɪd ˈtelɪkəmjuˈneɪʃən ˈnetwɜːrk/ noun a ground-based network of teleprinters that transmits flight plans and similar data between control centres. Abbreviation AFTN
aeronautical information circular /ˌɛərəˈnæstɪkəlˌɪnfəˈmeɪʃən ˈsɜːkljʊlə/ noun a notice issued by an aviation authority in which information is given about administrative, technical, safety or operational matters
Aeronautical Information Publication noun a document issued by a state in which information is given about aviation in that country. Abbreviation AIP
aeronautics /ˌɛərəˈnɔːstɪks/ noun 1. the science of aircraft design, construction and operation 2. the theory and practice of aircraft navigation
aeroneurosis /ˌɛərənjuːˈrəʊsɪs/ noun anxiety and fatigue in airline pilots as a result of long periods of flying
aeroplane /ˈɛərəplɛn/ noun a power-driven, heavier-than-air craft with fixed wings (NOTE: Many people use the words aeroplane and aircraft as if they had exactly the same meaning. However, aeroplanes, hot-air balloons, helicopters, airships and gliders are all aircraft. The US English is airplane.)
aeroplane performance /ˈɛərəplɛn pərˈfərməns/ a description in figures of what a plane can do, including, e.g., its speed, rate of climb, and the length of its take-off run
aerostat /ˈɛərəstæt/ noun a hot-air or gas-filled aircraft, e.g. an airship or balloon
aero-tow /ˌɛərəˈtɔʊ/ noun a technique of using a powered aircraft to pull a glider into the air. An aero-tow to 2,000 feet costs $25.
AFCS abbreviation automatic flight control system
AFDS abbreviation autopilot flight director system
affect /ˈæfekt/ verb to have an influence on something, or cause a change in something. Humidity and air density are factors which affect the output of the engine.
AGL abbreviation above ground level
agree /əˈɡriː/ verb 1. to have the same idea or opinion about something. The crew agreed with the findings of the investigation. 2. to come to an understanding. After hours of discussion, the cabin staff agreed to call off the planned strike.
agreed /əˈɡrid/ adjective generally accepted. The millibar is an agreed unit of pressure.
agreement /əˈɡrɪmənt/ noun 1. the state of having the same idea or opinion as somebody. We are in agreement. We agree. 2. a document in which the things that two or more people or organisations have agreed to do are written down. Regional Air Navigation Agreements

after /ˈɑːftər/ adverb positioned closer to the rear of an aircraft. Adverb closer to the rear of an aircraft. Afterburner /ˈɑːftəbərnər/ noun a system that injects fuel into the hot exhaust gases of a jet engine in order to increase thrust
AFTN abbreviation aeronautical fixed telecommunication network
agent /ˈeɪdʒənt/ noun 1. a chemical substance which causes a change. Ice crystals aggregate to form snowflakes. 2. a person who represents a company or arranges something for a company. The agent for British Airways. 3. a travel agent.
Aircraft

Aircraft noun a sensor which provides information on the pitch, bank and heading of an aircraft. Full form attitude heading reference system.

A1 abbreviation attitude indicator

AIAA abbreviation area of intense air activity

AIC abbreviation aeronautical information circular

Aid /eɪd/ noun something which helps somebody do something • verb to help • Computers can aid students in their studies.

AIDS /ɛdˈzɪs/ abbreviation 1. airborne integrated data system 2. aircraft integrated data system

Aileron /ˈeɪlərən/ noun a horizontal control surface hinged to the mainplane, which enables an aeroplane to bank or roll. By rotating the yoke the ailerons are moved and the aircraft rolls into a turn. (NOTE: The word comes from the French ‘aile’, meaning ‘wing’.)

Aim /aim/ noun a goal or objective. A 100% safe operation is the aim of all airline companies. • verb to intend or to try to do something • we aim to succeed we intend to succeed

AIP abbreviation Aeronautical Information Publication

Air /eər/ noun the mixture of gases which forms the Earth’s atmosphere. Air enters the cabin through an inlet.

AIRAC abbreviation aeronautical information regulation and control

Air Accident Investigation Branch /ˈeər əˌkɛsɪdʒəˈbreɪnt ɪnˈvestɪ ˈɡeɪfə ˈbreɪnt/ noun the department of the CAA of the United Kingdom responsible for establishing the cause of accidents. Abbreviation AAIB

Airborne /eəˈbɔːrn/ adjective lifted and kept in the air by aerodynamic forces. Shortly after the aircraft becomes airborne, the undercarriage is retracted.

Airborne installation /eəˈbɔːrn ɪˈstætʃənj/ noun a radio device in an aircraft which operates in conjunction with a ground installation. The airborne installation comprises an antenna, receiver and indicator(s).

Airborne weather radar /eəˈbɔːrn ˈwɛðə, rɛtrəˈdɑː/ noun a radar installation in an aircraft to give the flight crew information about the weather along their route. Abbreviation AWR

Air-breathing engine /,ɛɪ ˈbriːθɪŋ ˈɛndʒɪn/ an engine that burns a mixture of liquid fuel and air. (NOTE: There are four types of air-breathing engine: turbo jet, turbo prop, turbofan and ramjet.)

Air bridge /ˈeə brɪdʒ/ noun a link provided by aircraft that carry people and supplies between two places, especially in situations where travel by land is not possible.

Airbus /eəˈbʌs/ a trademark for a large passenger jet aircraft manufactured by aerospace companies from different European countries working together.

Air conditioner /ˈeə kənˈdɪʃən/ noun a device which filters and cools the air in a room or in an aircraft. In order to obtain maximum engine power, the air conditioner should be switched off for take-off.

Air conditioning /ˈeə kənˈdɪʃən/ noun a system for controlling the temperature of the air in a building or in an aircraft

Air-cooled /ˈeə kəʊld/ adjective cooled by means of a flow of air • air-cooled engines piston aero-engines cooled by air, not water

Air corridor /ˈeə kɔrɪdɔː/ noun a route that aircraft must take through an area in which flying is restricted

Aircraft /ˈeɪkrɪft/ noun a machine that is able to travel through the air • aircrafts, gliders, balloons, airships, helicopters, etc., are all aircraft. Abbreviation ACFT (NOTE: Aircraft has no plural form.)

Aircraft classification number /ˌeɪkrɪft klaˈsɪfɪkən dʒɪˈnʌmbər/ noun a number expressing the relative effect of an aircraft on a pavement for a specified sub-grade strength. Abbreviation CAN

Aircraft condition monitoring system /ˌeɪkrɪft kənˈdɪʃən ˌmɔnɪtərɪŋ ˈsɪstəm/ noun full form of ACMS
aircraft configuration

aircraft configuration /ˈeəkrəft ˈkɒnfərəns/ noun a particular combination of moveable parts such as flaps and landing gear that affects the aerodynamics of the aircraft

aircraft proximity hazard /ˈeəkrəft prəˈnɪzmətred/ noun same as airprox

aircraft stability /ˈeəkrəft ˈstæbɪlɪtɪ/ noun the tendency of an aircraft to return to its original attitude after being deflected

aircrew /ˈeəkrəʊ/ noun the pilot, navigator and other crew members of an aircraft

air cushion vehicle /ˈeə kjuːʃən ˈvɛrəkl/ noun same as hovercraft

air data computer /ˈeə ˈdeɪtə ˈkɒmətər/ noun an electronic device which provides information such as air temperature, airspeed and static pressure. Abbreviation ADC

air density /ˈeə ˈdenstɪ/ noun the density of the atmosphere

airfield /ˈeəflɪd/ noun an area of land given over to runways, taxiways and aprons. When the pressure setting on the altimeter is set to 1013.25 millibars, the pressure altitude of the airfield is known as QNE.

air filter /ˈeə ˈfɪlər/ noun a device to filter solid particles out of the air in engine and ventilation systems

airflow /ˈeəfləʊ/ noun 1. the movement of air over the aircraft as it travels through the atmosphere. 2. a current of air flowing through or past an object or body. The compressor must provide an adequate airflow through the engine.

airfoil /ˈeəfɔɪl/ noun US same as aerofoil

airframe /ˈeəfrɛm/ noun the body of the aircraft without the engines, instruments and internal fittings. The airframe has to be built to very specific requirements.

airframe icing /ˈeəfrɛm ˈaɪsɪŋ/ noun ice that forms on the aircraft structure as opposed to on components such as carburettors

air gap /ˈeə ɡæp/ noun a space between two things. Air gap type

spark plug a spark plug with a space between the electrodes, across which the spark jumps

air intake /ˈeə ˈɪnteɪkt/ noun the front part of a jet engine where air enters

air lane /ˈeə lɛn/ noun a regular route that aeroplanes fly along

airline /ˈeəlайн/ noun a company which manages air transport services for passengers or goods. Which airline is she working for, Air France or Air Canada? Most airlines do not allow passengers to smoke during flight.

airliner /ˈeəlайnər/ noun an aeroplane designed to carry large numbers of passengers. Concorde is the world’s fastest airliner.

airline representative /ˌeəlайн ˌreprɪˈzentətɪv/ noun a person who acts on behalf of an airline, or a person who works for an airline. Passengers should assemble in the departure lounge where an airline representative will meet them.

airline security area /ˌeəlайн ˈsɪkjerɪtɪ æreə/ noun an area in which measures are taken by an airline to ensure the safety of people and property.

Airline Transport Pilot’s Licence /ˌeəlайн ˌtraspɔrˈteɪʃən ˈpɑləts ˈlaisəns/ noun the licence that a person must have to be the pilot-in-command or co-pilot of a public transport aircraft. Abbreviation ATPL

airman /ˈeəmən/ noun a person who is a member of a country’s Air Force.

airmanship /ˈeəmənʃɪp/ noun all-round skill in piloting an aircraft which includes academic knowledge, common sense, quick reactions, awareness, experience, consideration for other people and property. Keeping a careful lookout for other aircraft in the circuit is good airmanship.

I was always told by my airmanship instructor, in an emergency, to find the largest piece of asphalt with the biggest fire trucks” [INTER PILOT]

air mass /ˈeə mæs/ noun a very large mass of air in the atmosphere in which the temperature is almost constant and which is divided from another mass by a front.

Air masses are divided into two
types according to source region, and these are known as polar and tropical air masses.

airpark /ˈeəpark/ noun a small airport, usually found near a business or industrial centre

airplane /ˈeəpleɪn/ US same as aeroplane

air pocket /ˈeəpokt/ noun a small area where the air is less dense or where there is a downward air current, and which makes an aircraft lose height suddenly

air pollution /ˈeə poləʃən/ noun pollution of the air by gas, smoke, ash, etc. & Solid particles in the air include dust, sand, volcanic ash and atmospheric pollution. Also called atmospheric pollution

airport /ˈeəpɔrt/ noun a civil aero-drome designed for the take-off and landing of passenger-carrying aircraft for the general public and/or cargo aircraft. & London Heathrow is one of the busiest airports in the world. Abbreviation A/P

airport authority /ˈeəpɔr t ɔrˈθɔrti/ noun the organisation responsible for the running of an airport

airport security officer /ˈeəpɔrt ˈsɛkərtri əˈfɪsər/ noun a person employed by an airport authority to check passengers and baggage for illegal substances or devices, e.g. drugs, guns

airport surface detection equipment /ˈeəpɔrt ˈsɜrfis dɪˈtekʃən ɪˌkwɪpmənt/ noun short-range radar equipment that scans the surface area of an airport and tracks the movement of aircraft and other vehicles on the ground

airprox /ˈeəprɒks/ noun a situation in which aircraft are too close to one another in an area of airspace and there is the possibility of danger to them. Also called aircraft proximity hazard

air-sea rescue / əˈer-ˌsiː ˈrɛsıkjuː/ noun a rescue at sea in which aircraft, especially helicopters, are used

airship /ˈeəʃiːp/ noun a powered, gas-filled balloon which can be steered & An airship is classified as a lighter-than-air craft.

airshow /ˈeəʃəʊ/ noun a public display of aircraft in flight and on the ground, held at an airfield

airspace /ˈeəspeɪs/ noun the part of the atmosphere that is above a particular geographical area and is subject to the laws of a particular country or controlling authority. & The Korean 747 flew into Soviet airspace and was shot down.

airspeed /ˈeəspiːd/ noun the speed of the aircraft relative to the air around it. & Maintain a constant airspeed on final approach.

airspeed indicator /ˈeəspiːd ɪnˈdɪkətər/ noun a primary cockpit or flight deck instrument which shows the pilot the speed of the aircraft in relation to the air around it. & Airspeed is shown in knots on the airspeed indicator. Abbreviation ASI

air station /ˈeə ˈsteɪʃən/ noun a small airfield with facilities for the maintenance of aircraft

airstream /ˈeəstrɛm/ noun the flow of air caused by the movement of the aircraft through the air. & Pressure is built up inside the pitot tube by the airstream.

airfield /ˈeəˌfɪld/ noun a place for aircraft to take off and land that has no facilities and is often temporary

air traffic /ˈeə ,træksi/ noun a small commercial aircraft used for short flights between places not on a regular airline route
air terminal /ˈeə ˌtɛrmɪn(ə)/ noun 1. an airport building with a range of facilities where passengers check in before boarding their plane and where they arrive when their plane lands 2. a building in a city for receiving passengers who are being transported to or from an airport by train or bus

air terririz(ə)m/ noun violent actions that aim to frighten or kill passengers, disrupt air services, or damage or destroy aircraft in an attempt to achieve a political objective

air-tight /ˈeə tatt/ adjective closed or sealed so that air cannot get in or out

air-to-air /ˈeətəˈeə/ adjective between one airborne aircraft and another. air-to-air communications communications between one airborne aircraft and another

air to air refuelling area /ˈeə tə, ˈeə riːˈfjuːlɪŋ ˌɛəriə/ noun an area of airspace in which tanker aircraft are permitted to refuel other aircraft in flight. Abbreviation AARA

air-to-ground visibility /ˈeə tə ˈɡraʊnd ˈvaɪzərəˈbɪləti/ noun a description of how easily seen an object on the ground is from the air. Glare caused by reflection of sunlight from the top of a layer of fog or haze can seriously reduce the air-to-ground visibility.

air-to-surface /ˈeə tə ˈsɜːfəs/ adjective directed from a flying aircraft to a point on the ground

air traffic /ˈeə ˈtɛrəfɪk/ noun aircraft operating in the air or on the airport surface. Students practising circuit flying need to keep a very careful lookout especially at times when there is a lot of air traffic.

air traffic control /ˈeə ˈtɛrəfɪk ˈkənˈtrəʊl/ noun a service that oversees and guides the movements of aircraft and provides for the safe and efficient flow of air traffic. Controllers in the tower provide an air traffic control service for aircraft in the air around the airfield. Abbreviation ATC

COMMENT: Air Traffic Control’s main function is to maintain separation between aircraft operating within Instrument Flight Rules (IFR), but it also provides a service to aircraft using Visual Flight Rules (VFR). Ground control is for aircraft taxiing to and from runways. The tower controls aircraft around an airport, clearing them for take-off or landing. Departure and approach controls monitor and control aircraft around the airport, and en route centres control traffic between airports.

air traffic controller /ˈeə ˈtɛrəfɪk ˈkənˈtrəʊlə/ noun a person who works in air traffic control and whose main task is to ensure correct separation of aircraft in all phases of flight. The air traffic controller approved the emergency landing. Abbreviation ATC.

air traffic movements /ˈeə ˈtɛrəfɪk ˈmjuːvmənts/ plural noun the number of aircraft taking off and landing. an increase in air traffic movements

airway /ˈɛəweɪ/ noun an area of the sky, usually rectangular in cross-section, along which civil aircraft fly from place to place. Airways provide a high degree of safety by ensuring adequate separation between aircraft. Aircraft inside an airway are controlled by ATC. (Note: Airways are usually 10 nm wide with a centreline joining navigational beacons.)

Airways /ˈɛəweɪz/ noun a commercial company operating flights (Note: Usually used in the names of companies, e.g., British Airways, South African Airways)

airworthiness /ˈɛə ˈwɜːðənəs/ noun the state of an aircraft with regard to whether it can fly safely, as determined by a national certifying authority

airworthiness directive noun a regulation issued by an aviation authority when a problem has been identified with a particular aircraft part. Abbreviation AD

airworthy /ˈɛəwɜːrðə/ adjective meeting the standards of a national certifying authority. It is the pilot’s responsibility to ensure that the aircraft is airworthy.

AIS abbreviation aeronautical information services
aisle /əul/ noun a long passageway between the seats in the passenger cabin of an airliner. **aisle seat** a seat which is by an aisle, as opposed to a window seat.

alarm /ələrm/ noun 1. fear or worry. If the ammeter shows a high level of charge after start-up, it is quite normal and no cause for alarm. 2. a warning sound or light. In the event of fire or overheat, the control unit will produce an alarm. **verb** to frighten or worry. Severe turbulence may alarm passengers.

alert /ələt/ adjective fully awake, watchful and ready to deal with any situation. The crew must be alert at all times to the possibility of hijacking, bombs and stowaways. **noun** a signal, warning everyone to be alert. **verb** to be on the alert to be watchful and ready for anything that may happen. **noun** an alarm.

alight /ələt/ adjective on fire. Although the passenger thought he had extinguished his cigarette, it was still alight when he threw it into the waste disposal bin. **verb** (formal) 1. (of people) to leave or get off an aeroplane. At some airports, passengers alight onto the apron when they leave the aircraft. 2. (of aircraft) to land. An aeroplane may not fly over a city below such a height as would allow it to alight in the event of an engine failure.

align /ələin/ verb 1. to position along an axis or line. The nose wheel must be aligned in a fore and aft direction during retraction. 2. to set in a correct position in relation to something else. Aligned white marks on the wheel and tyre indicate that there is no creep.

alignment /ələinmənt/ noun 1. position in relation to an axis or a line. **verb** to check the alignment of something to make sure it is in the correct position relative to an axis or line. **noun** to maintain alignment with the runway to keep the aircraft on the imaginary extended centre line of the runway. 2. correct position in relation to something else.

allowance /ələʊns/ noun 1. a signal, a provision of something particular for a given purpose. At the check-in desk, airline staff are responsible for the allocation of seats to passengers. **noun** the frequency or range of radio frequencies set aside for a particular use. The frequency allocation for VOR is 108–117.975 MHz.

allow /ələu/ verb to enable, to permit or to authorise. An engine should be run at low rpm after flight to allow engine components to cool. Additional fuel is carried to allow for holding en route. Passengers are not allowed to smoke on some aeroplanes.

allowable /ələʊəbl/ adjective permitted or authorised. Maximum allowable weight. Maximum allowable tyre pressure.

allowance /ələʊəns/ noun 1. consideration for possibilities or changing circumstances. **verb** to make allowances for to take into account. When estimating flight duration, make allowances for taxing time. 2. something such as money given at regular intervals or for a specific purpose. A travel allowance to cover hotel and restaurant bills.

anything that may happen. To keep the aircraft on the imaginary extended centre line of the runway 2. correct position in relation to something else.

Civil Aviation
alloy / ˈæləʊ/ noun a mixture of metals
an alloy of aluminium and lithium
alter /ɔlˈtər/ adjective up in the air
alter /ɔlˈtər/ verb to change, modify or adjust
If there is a risk of collision, alter course to the right.
If the rate of descent is too low, alter the throttle setting accordingly.
The rudder linkage was altered to comply with certification requirements.
alteration /ɔlˈteɪʃən/ noun 1. a change, modification or adjustment
It was discovered that alterations had been made to the log book.
As a result of the accident, alterations were made to the design of the carburettor heat system.
2. the act of making changes, modifications or adjustments
heading alteration the act of making of heading corrections
alternate /ɔlˈtərət/ adjective /ˈæltərət/ 1. every other
A, c, e, and g are alternate letters, as are b, d, f, h, etc.
2. alternate days every other day
There are outward flights on alternate days, i.e. on Mondays, Wednesdays and Fridays.
US same as alternative
noun 1.1 or 2.
/ˈæltərəti/ an aerodrome of second choice to be used if the aircraft cannot be landed at the aerodrome of first choice because of bad weather, etc.
The point of no return is calculated before departure to cover the chance that the terminal airfield and its alternate become unavailable during flight.
verb /ˈæltərəti/ to happen in turns
Captain Smith and Captain Jones alternate as CFI on a daily rota each captain has one day on duty as CFI followed by a day off, on which the other captain acts as CFI
alternating current /ˈæltərətɪŋ/ noun an electric current which reverses its direction at regular intervals
Resistance to alternating current remains almost constant and is independent of frequency. Abbreviation AC
alternative /ɔlˈteɪʃən/ adjective referring to another or a second possibility
A turbine bypass, in the form of an alternative exhaust bypass, is fitted with a valve.
a: an alternative means of doing something another or different way of doing something
n: noun another choice or possibility
In some emergency situations the pilot may have no alternative but to force-land the aircraft as soon as possible.
alternator /ˈæltərətər/ noun a type of generator designed to produce AC power
alimeter /ˈæltɪmətər/ noun a radio instrument for measuring vertical distance or altitude
alimeter check a routine check to ensure that the altimeter pressure setting is correct
alimeter display the display of altitude information, which can be given in analogue or digital form.
pointer
altitude /ˈæltɪtju/ noun the vertical distance between an aircraft, or a point, and an official altitude, or a level, and mean sea-level
lose altitude to descend from higher to a lower altitude
cabin altitude the artificial altitude created in the cabin by pressurisation
alto- /ˈæltəʊ/ prefix at a moderate or high altitude
altocumulus /ˈæltəˈkʌmjuːləs/ noun small white cumulus clouds which form as a layer at moderate altitude, usually meaning fair weather.
Compare stratocumulus
altostratus /ˈæltəˈstrætəs/ noun a uniform layer cloud at moderate altitude
aluminium /ˈæləˈmɪnjʊm/ noun a strong, light metal used in the construction of aircraft (NOTE: The US English is aluminum.)
COMMENT: In recent years, aluminium has been increasingly replaced by the use of composite materials in the construction of different types of aircraft, from small home-built light aircraft to transport aircraft such as the Airbus A320.
aluminum /ˈæləmənəm/ noun US same as aluminium
AMA abbreviation approach monitoring aid
amber /ˈæmbər/ adjective an orange or yellow colour
An amber light flashes on the instrument panel. (NOTE: Amber
is often used to describe the colour of the yellow light in traffic signals.)

ambient /ˈæmbɪənt/ adjective referring to the surrounding atmospheric conditions. Fresh ambient air is routed into the cabin. 

ambient temperature the temperature outside the aircraft

ambient pressure /ˈæmbɪənt ˈprɛʃə/ noun the pressure outside the aircraft

ambiguity /ˈæmbiɡjuəti/ noun something heard or seen which can be understood in more than one way, thus resulting in possible confusion. Correct use of R/T phraseology avoids ambiguity.

ambiguous /ˈæməbɪɡjʊəs/ adjective able to be understood in more than one way: It is important that R/T transmissions are not ambiguous.

AM amendment amendment

amend /əˈmɛnd/ verb to change, update, improve or correct something. He amended the entry in his log book he corrected or changed the entry in his log book.

amendment /əˈmɛndmənt/ noun a change, updating, improvement or correction made, e.g., to a document or procedure. When a terminal aeronautical mobile service forecast requires amendment, the amended forecast is indicated by inserting AMD after TAF.

ammeter /ˈæmɪtər/ noun an instrument for measuring amperes in order to give the strength of an electric current. The centre-zero ammeter tells the pilot the status of the aircraft battery.

amp /amp/ abbreviation ampere

amperage /ˈæmpərɪdʒ/ noun the strength of an electric current expressed in amperes. Measuring the amperage of a motor can give a rough estimate of the load on the motor.

ampere /ˈæmpər/ noun a unit of electric current equal to one volt flowing through an impedance of one ohm. A 13-amp fuse. Current flow is measured in amperes. Abbreviation amp.

ampere hours number of amperes per hour. Battery capacity is rated in ampere hours.

ample /ˈɛmpl/ adjective plenty of. During the course you will have ample opportunity to demonstrate your skill.

analog /ˈænəlɑɡ/ adjective same as analogue.

analogous /ˈænələʒəs/ adjective similar or comparable to. Isobars are analogous to contour lines.

amplification /ˌæmplɪfɪˈkeɪʃən/ noun the act of increasing the strength of an electrical signal. Amplification of the signal increases the volume.

amplifier /ˌæmplɪˈfɪər/ noun an electronic device for increasing the strength of an electrical signal. If the power supply from the amplifier to the gauge fails, the needle slowly falls to zero.

amplify /ˌæmplɪˈfai/ verb to increase the strength of an electrical signal. An electric current is amplified and then transmitted. (NOTE: amplifies – amplifying – amplified)

amplitude /ˈæmplɪtjuːd/ noun the maximum variation of a vibration or oscillation from the position of equilibrium. To calculate fuel required, multiply the duration of the flight by the consumption of the engine at the required power.

AMS abbreviation aeronautical mobile service

AMSL abbreviation above mean sea level

AMSS abbreviation automatic message switching system

anabatic /ˈænəbætɪk/ adjective referring to a warm flow of air traveling up a hillside or mountainside. Compare katabatic.

anabatic wind /ˈænəbætɪk ˈwɪnd/ noun a wind current, caused by solar heating of the land, that rises up a south-facing mountainside. Compare katabatic wind.

analog /ˈænəlɒɡ/ adjective

analogous /ˈænələʒəs/ adjective similar to or comparable to. Isobars are analogous to contour lines.

analogue /ˈænələʊ/ adjective 1. representing a quantity or signal that varies continuously by means of a physical apparatus such as a dial and pointer. The electronic centralised aircraft monitor (ECAM) does not have analogue
analyses /'ænəlɪsɪs/ noun breaking down a substance into its parts in order to study them closely. At a crash site, samples of materials are removed for analysis. (NOTE: The plural form is analyses /'ænəlɪsɪz/.)

anchor /ˈæŋkər/ noun a device connected to and dropped from a boat in order to prevent the boat from moving in the water. verb to drop an anchor to prevent the boat from moving.

anemograph /ˈænəməgræf/ noun an instrument which maintains a continuous recording of wind direction and speed on a graph. The anemograph gives a continuous recording of wind velocity which is displayed on a chart and reveals gusts, squalls and lulls.

anemometer /ˈænəməmətər/ noun an instrument, usually attached to a building, with three or four 'cups' which rotate with the wind thus providing wind-speed information. The anemograph is connected to and dropped from a boat in order to prevent the boat from moving.

aneroid /ˈænərɔɪd/ adjective not containing or using liquid.

aneroid barometer /ˈænərɔɪd bəˌrɑːmətər/ noun a barometer which uses an aneroid capsule to sense atmospheric pressure changes.

aneroid capsule /ˈænərɔɪd ˈkæpsjʊl/ noun a thin flexible cylindrical box, usually made of metal, which has most of the air removed from it and which expands and contracts with changes in atmospheric pressure. The aneroid capsule in the barometer is connected to a system of levers which operate a pointer.

aneroid switch /ˈænərɔɪd swɪtʃ/ noun a switch operated by an aneroid capsule.

angle /ˈæŋɡɡəl/ noun the difference in direction between two lines or surfaces measured in degrees.

angle of attack /ˈæŋɡɡəl əv ˈæŋɡɡəl/ noun the angle formed between the relative airflow and the chord line of the aerofoil.

angle of incidence /ˈæŋɡɡəl əv ˈɪnsɪdəns/ noun the angle formed between the chord-line of the mainplane and the horizontal when the aircraft is in the rigging position.

angle of inclination /ˈæŋɡɡəl əv ˈɪnklɪnən/ noun the angle formed between a sloping path or surface and a reference point or line which is either horizontal or vertical.

annotate /ˈænəteɪt/ verb to add notes to an existing document, book, chart, etc. He annotated his report after he was asked to give the exact time of the incident. Variation is annotated east or west according to the direction of change.

annotate /ˈænəteɪt/ verb to add notes to a document, book, chart, etc., or the notes added.
announced to state something publicly or officially. British Airways announced the departure of flight BA152 to New York.

Announcement /əˈnɑːnsmənt/ noun a public statement. The captain made a public address (PA) system announcement asking passengers to remain seated.

Annual /ˈænjʊəl/ adjective 1. happening once a year. an annual inspection an inspection that happens once a year. 2. over a period of one year. Overload operations should not exceed 5% of annual departures.

Annular /ˈænjuəl/ adjective shaped like a ring.

Annunciation /ənˈnʌnsɪʃən/ noun an announcement or indication on the annunciator panel or electrode. The positive connector of a device which gives off a sound or light to indicate which of several electrical circuits is active. An annunciator panel may contain a precise warning.

Annunciator /ənˈnʌnsɪtɪər/ noun a positive pole or electrode. The positive connector of a battery is usually called the anode and is indicated by the sign +.

Anodise /ənˈnədəz/, anodize verb to coat or cover by using electrolysis. Anti-corrosion treatment includes the anodizing of aluminium parts.

Anomalous /ənˈnɒmələs/ adjective referring to something unusual, unexpected or otherwise departing from what is the normal order or range. An anomalous instrument reading an unusual instrument reading which may require further investigation.

Anomaly /ənˈnɒməli/ noun something unusual, unexpected or otherwise not within the normal order or range. Any anomalies in the localiser will be detected during calibration.

Anoxia /ænˈnɔksɪə/ noun a state in which no oxygen reaches the body tissues, resulting in death. Hypoxia is a lack of sufficient oxygen, the symptoms of which are sometimes difficult to detect.

Antenna /ˈæntən/ noun US same as aerial.

Anti- /æntɪ/ prefix against, opposing. Anti-icing, anti-clockwise, anti-corrosion.

Anticipate /æntɪˈsɪptɪt/ verb to realise what is likely to happen and do what is necessary in readiness. During take-offs, pilots should anticipate an engine failure. Pilots should think ahead and be ready to act immediately if an engine fails during take-off.

Anticipation /æntɪˈsɪpeʃən/ noun a state in which you realise what is likely to happen and do what is necessary in readiness.

Anticipation of landmarks /ˈæntɪˌsɪpeʃən əˈlɛmkerz|əmks|/ noun the action of watching out for landmarks which you know from flight planning should be visible at a particular stage of a flight.

Anticlockwise /ˌæntɪˈklɒkwaɪz/ adjective, adverb referring to a circular movement in the opposite direction to the hands of a clock. Turn the nut anticlockwise to loosen it. Opposite clockwise.

Anti-collision /ˌæntɪ kəˈlɪʒən/ adjective helping to prevent collisions.

Anti-collision light /ˌæntɪ kəˈlɪʒən laɪt/ noun a flashing white light on an aircraft.


Anticyclone /ˌæntɪsɪkˈlɒn/ noun an area of high atmospheric pressure, usually associated with fine dry weather in summer and fog in winter. Winds circulate round an anticyclone clockwise in the northern hemisphere and anticlockwise in the southern hemisphere.

Anti-icing /ˌæntɪ ˈɪsɪŋ/ adjective preventing icing. Anti-icing additive.

Anti-icing fluid /ˌæntɪ ˈɪsɪŋ ˈflʌɪd/ noun a fluid which prevents icing.
anti-skid /ˌænti ˈskid/ adjective designed to prevent skidding

anvil /ˈænvil/ noun a metal block which ends in a point, has a rounded bottom and a flat top, and on which horseshoes, etc., are made. A cumulonimbus cloud has a characteristic anvil shape.

anvil cloud /ˈænvil klaʊd/ noun a cloud, usually a large dark thundercloud, which has the shape of an anvil.

A/P abbreviation 1. airport 2. autopilot

apart /əˈpɑːt/ adverb separated from one another. The jets were only 200 feet apart, vertically.

aperture /əˈpɜːtʃər/ noun an opening. Any aperture or cut-out in the fuselage structure must be specially strengthened.

APHAZ abbreviation aircraft proximity hazard

APP abbreviation 1. approach 2. approach control

apparent /ˈæpərənt/ adjective 1. obvious, clear. It became apparent that carbon monoxide was entering the cabin. 2. from the above, it will be apparent that ... from the above, it will be clear that ... 2. seeming or appearing to be. An apparent failure of the system. 3. The ILS showed an apparent deflection to the right.

appear /əˈpɪər/ verb 1. to come into view. Another aircraft appeared on the radar screen. 2. to seem to be. Although air may appear to be still, it is in fact, moving.

appearance /əˈpɜərəns/ noun 1. an instance of being seen or coming into view. The appearance of the passenger on the flight deck surprised the crew. 2. the way something looks. It may be difficult to recognise a particular stretch of coast in an area simply by its appearance.

appendix /ˈæpəndiks/ noun a section containing additional information, often found at the end of a book, etc. Charts are reproduced as an appendix to the map section. (Note: The plural form is appendices.)
an appreciation of the basic gas laws. 2. an increase in value. 3. There has been an appreciation of 100% in the value of the building in 10 years. Opposite depreciation. 3. thankfulness, gratitude. 4. After gaining her private pilot's licence, the newly-qualified pilot showed her appreciation by sending a letter of thanks to her instructor.

approach /ə'prəʊtʃ/ noun 1. a path towards something. 2. The approach to the terminal was blocked by an overturned lorry. 2. the descent of an aircraft towards the place where it intends to land. Abbreviation APP 3. a way of achieving or doing something. 4. to take a different approach to a situation to deal with or to manage a situation in a different way. 1. move nearer in place or time to something. 2. The aircraft is approaching a danger area. 3. nightfall is approaching it will soon be dark. 2. to have a particular mental attitude towards something. 4. He approaches his studies with great enthusiasm. 3. to speak to or get in touch with somebody. 5. You must approach the chief flying instructor regarding your request for a week's holiday.

approach control /ə'prəʊtʃ ˈkən,ˌtrɔːl/ noun a control station in an air traffic control centre that guides an aircraft while it is making its approach.

approach monitoring aid /əˈprəʊtʃ ˌmɔːnɪtərɪŋ ɛid/ noun an instrument or system that helps an air traffic controller to track the position and movements of an aircraft during its approach. Abbreviation AMA.

approach path /əˈprəʊtʃ ˈpaːθ/ noun the course taken by the aircraft in preparation for landing.

approach plate noun a document issued by an aviation authority which provides detailed information about how to land at a given airport in very poor visibility.

approach to land /əˈprəʊtʃ tə 'land/ noun the final stage of the flight when the aircraft is manoeuvred into position, relative to the landing area, in preparation for landing. o on the approach to land, the aircraft reduces speed and height.

appropriate /əˈprəʊpriət/ adjective suitable or needed. 2. appropriate action the action that is needed to deal with the situation.

appropriately /əˈprəʊpriətli/ adverb in a way that it is suitable or necessary. 2. to adjust the mixture appropriately to adjust the mixture to suit the conditions.

approval /əˈprəʊv(ə)/ noun permission or agreement. 2. with the captain's approval with the permission of the captain. 3. to approve of believe something to be right or good. 4. Nearly everybody approved of the new colour scheme for the furnishings. 5. he doesn't approve of women being airline pilots he believes that it is wrong for women to be airline pilots.

approx /əˈprɒks/ same as approximate, approximately.

approximate adjective /əˈprɒksɪmət/ not exact, around or about. 2. an approximate distance of 60 nm. 3. about 60 nautical miles. 4. to be close to, to be around. (NOTE: Approximate can be shortened to approx or APRX (ICAO).) approximately /əˈprɒksɪmətli/ adverb not exactly. 2. about or around. 3. Approximately 2,000 people work in the airport. (NOTE: Approximately can be shortened to approx or APRX (ICAO).)

approximation /əˌprɒksɪmeɪʃ(ə)n/ noun a calculation which is not exact but near enough, a rough estimate. 2. an approximation of aircraft height a rough estimate of aircraft height.

apron /ˈeɪprɒn/ noun an area of tarmac, concrete, etc., outside a hangar for parking aircraft. (NOTE: The US term is ramp.)

APRX abbreviation (ICAO) 1. approximate. 2. approximately.
APU

APU abbreviation auxiliary power unit

aquaplaning /ækwəpleɪɪŋ/ noun sliding in an uncontrolled way over a thin layer of water on the runway. Aquaplaning is caused by a layer of water between the tyre and the runway.

arbitrary /əˈbɜtrəri/ adjective decided by chance rather than by careful logical thought, happening without planning or at random. The statute mile is an arbitrary unit of measurement. (NOTE: The nautical mile is not an arbitrary unit: it is based on calculations which have a wider use. See arc.)

arc /ɑːk/ noun part of the circumference of a circle. A nautical mile is the length of an arc on the Earth’s surface subtended by an angle of one minute at the centre of the Earth. ■ verb to jump across a gap. The spark arcs from one electrode to another. ■ The condenser prevents spark plugs from arcing. ■ gap

Arctic /ˈærktɪk/ adjective referring to the area around the North Pole. ■ cold Arctic air cold air from the Arctic. ■ the Arctic Circle a parallel running round the Earth at latitude 66°32N, to the north of which lies the Arctic region. ■ noun a the Arctic the area of the Earth’s surface around the North Pole, north of the Arctic Circle. ■ the Arctic area area forecasts a weather forecast for a region rather than, e.g., an aerodrome.

area /ˈɛriə/ noun 1. a defined part of a surface. 2. a region. ■ area control service /ˌɛriə kanˈtroʊl, ˈɑrəsəv/ noun a unit that provides air traffic control services to flights within the area for which it is responsible.

area navigation /ˌɛriə ˈnæviˈneɪʃən/ /ˈɛriə /ˈnæviˈneɪʃən/ a method of navigation that permits aircraft to operate on any desired flight path within the area covered by ground-based navigational aids, self-contained navigational aids or a combination of the two. Abbreviation RNAV

argument /ˈɑrgjʊmənt/ noun 1. a factor. ■ QNH is the pressure at station level reduced to sea level using arguments of station height and an international standard atmosphere. 2. a verbal disagreement. ■ to have an argument to disagree openly and verbally with somebody. ■ The investigation revealed that there had been an argument between the commander and the copilot about the advisability of continuing with the final approach to land. 3. a reason. ■ One of the arguments in favour of building the new terminal is the increase in opportunities of employment for the local residents.

arid /ˈærɪd/ adjective very dry. ■ arid terrain desert. ■ arid Sub-tropical climate. a hot, dry climate.

arise /əˈraɪz/ verb to come into being, to happen, to show up or to appear. ■ Should any problems arise, report back to me immediately. (NOTE: arising – arose – arisen)

arm /ɑːm/ noun 1. a device similar in function to a human arm, operating as a lever. 2. the horizontal distance from a reference point to the centre of gravity. ■ The principle of the arm is used in weight and balance calculations for an aircraft. ■ verb to make ready for action or use. ■ Door-mounted escape slides are armed before flight.

armature /ˈɑrmatʃər/ noun the rotating coils of an electric motor or dynamo. ■ Secondary windings are wound over the primary windings and the whole assembly is known as an armature.

ARR abbreviation arrival

arrange /əˈrɛndʒ/ verb 1. to organise, to plan and prepare. ■ to arrange a meeting. 2. to put in special position. ■ Charts should be numbered and arranged in order of use. ■ A series of dipoles are arranged in a circle.

arrangement /əˈrɛndʒmənt/ noun 1. a plan. ■ The arrangements for the VIPs are being handled by the public relations department. 2. the relative positions of a number of different parts. ■ The diagram shows a simple arrangement of pistons, cylinders and pipes. ■ array /əˈrei/ noun an arrangement of antennas. ■ The localiser antenna array is very wide.

arrest /əˈrest/ verb 1. to stop or to prevent something from happening.
arrest the spread of a fire to stop the fire spreading. 2. to hold somebody for breaking the law 4. He was arrested at the airport. 3. noun the act of holding somebody for breaking the law 5. His arrest was unexpected.

arrester ə'restər/ noun a device or substance which prevents or stops something from happening

arrival ə'raiv(ə)r/ noun the act of reaching somewhere. Abbreviation ARR: Gulf Air announce the arrival of flight GF147 from Abu Dhabi flight GF147 from Abu Dhabi has just landed

arrivals ə'raiv(ə)rəz/ noun the part of an airport that deals with passengers who are arriving

arrive ə'raiv/ verb to reach somewhere 4. the flight from Tokyo arrived at 8.30 the flight from Tokyo landed at 8.30

arrow /'ærəʊ/ noun a painted or printed sign which points to something 5. Non-return valves are marked with an arrow which shows the direction of flow.

arrow convention /'ærəʊ kən'venʃən/ noun an agreed method of using arrows when drawing wind triangles

article /'ɔtəkl(ə)r/ noun an object, an item 5. loose articles things which may move during flight and cause problems

artificial /'ɑrtɪfɪʃ(ə)r/ adjective not natural, made by humans 5. The small needle indicates cabin altitude or the artificial altitude created by the pressurisation system.

artificial horizon /'ɑrtɪfɪʃ(ə)r(h); hə 'rætz(ə)r/ noun an instrument that displays the degree of pitch or bank of an aircraft relative to the horizon

ascend /ə'send/ verb to rise, to go or move upwards 5. Hot air ascends. 5. in ascending order in order of number or rank with the smallest or less important at the bottom and the largest or more important at the top. Opposite descend

ascent /ə'sent/ noun a rise, a slow upward movement 5. the forced ascent of air over high ground 5. In a stable atmosphere where the ascent of air is forced, precipitation is mostly light and occasionally moderate.

ascertain ə'seətərn/ verb to find out, to make certain 5. During pre-flight checks, control surfaces should be moved by hand to ascertain that they have full and free movement.

ASDE abbreviation airport surface detection equipment

ASI abbreviation airspeed indicator

ASMI abbreviation aerodrome surface movement indicator

aspect /'æspekt/ noun 1. a part of a problem or subject 5. Vertical motion is an important aspect of meteorology. 5. safety aspects matters related to safety 2. the view from a particular position 5. The aspect of the runway on final approach helps the pilot to judge height and progress.

aspect ratio /'æspekt 'ræʃtər/ noun the ratio of the length of an aircraft’s wing to the average distance between the front and back edge of the wing (NOTE: Aircraft that operate at low speeds, for example gliders, need a high aspect ratio and have long narrow wings. Supersonic aircraft need a low aspect ratio, which is created by swinging the wings back.)

asphyxiation /'æsfɪksə'teʃən/ noun unconsciousness or death caused by lack of oxygen 5. Fire may result in the cabin being filled by smoke causing asphyxiation.

ASR /'eəs'reiə/ abbreviation 1. airport surveillance radar 2. altimeter setting region

assemble /ə'sem(ə)l/ verb 1. to put a number of parts together 5. The parts are made in different countries but the plane is assembled in France. 2. to gather together 5. Passengers should assemble in the departure lounge where an airline representative will meet them.

assembly /ə'sem(ə)li/ noun 1. something that is made up of smaller parts 2. the act of putting parts together to make a whole 5. Final assembly of the A320 takes place in France.

assess /ə'ses/ verb to check, estimate or find out 5. Cabin crew must assess if
assessment

their exits are usable. 1 to assess a situation to consider all aspects of a situation

assessment /'əsesmənt/ noun a judgement on a situation based on careful thought 1 The captain’s assessment of factors such as aircraft damage, passenger-load, fire, etc., will affect the decision on whether to evacuate the aeroplane or not.

assign /'əsain/ verb to set apart beforehand or allocate for a specific purpose 1 assigned seats seats selected beforehand for particular people 2 Crew sit in their assigned seats. 3 Individual carriers assign codes to aircraft.

assist /'əsist/ verb to help 1 If you have any difficulty, cabin staff will assist you. 2 When evacuating the aircraft, hand signals by cabin staff assist in directing passengers to the exits. 3 power

assistance /'əsist(ə)səns/ noun help 1 to require assistance to need help 2 to provide assistance to give help

associate /'əsəsəsi/ verb to come with or be linked to something else 1 Turbulence is often associated with strong winds. 2 The airport authority has to overcome a lot of problems associated with its plans to build a new terminal.

association /ə,ˌsəsəˈeiʃ(ə)n/ noun 1. a group of people who organise themselves into an official body with common objectives and a code of conduct. 2. in association with together with 1 Rain-ice occurs only rarely over the British Isles and is usually found in association with warm fronts.

assume /ə 'sju:m/ verb 1. to take as true before there is proof 1 I assume that she’s ill because she’s not at work today – but I may be wrong. 2. to suppose 1 for our studies we will assume that the earth is a perfect sphere we know that the Earth is not a perfect sphere but it helps if we accept, for the time being, that it is assuming (that) accepting or supposing that 2 Assuming that the return flight from the point of no return to A is made on three engines, calculate the distance from D to the point of no return. 3. to take on, to undertake the duties of somebody 1 The copilot assumed control of the aircraft after the captain was taken ill during the flight. 4. to take a particular bodily position 1 The correct technique of using the escape slides is to assume a sitting position.

assumption /ə'sæmpʃ(ə)n/ noun an understanding or belief 1. The one-in-sixty rule is based on the assumption that one nautical mile subtends an angle of one (at a distance of 60 nautical miles).

asymmetric /ˌæsɪmtrɪk/ adjective not identical or equal on each side of an imaginary central dividing line. Opposite symmetric

asymmetric flight /ˌæsɪmtrɪk 'flæt/ noun a condition in which one engine, displaced from the aircraft’s centre-line is not working

asymmetric power /ˌæsɪmtrɪk 'pəʊər/ noun power on one side of the aircraft’s centre line only

asynchronous /ˌæsə'kraʊnəs/ adjective 1. not happening at the same time or rate 1 An asynchronous orbit is a 24-hour orbit which enables a satellite to remain overhead one part of the Earth’s surface. 2. not in frequency or phase

asynchronous computer /ə'səkrənəs kəm'pjʊtə/ noun a computer which does not process information according to the internal clock

ATA /'eɪti: / abbreviation actual time of arrival

ATC /'eɪti: / abbreviation 1. air traffic control 2. air traffic controller

ATCC abbreviation air traffic control centre

ATCRU abbreviation air traffic control radar unit

ATD /'eɪti:/ abbreviation actual time of departure

ATFM abbreviation air traffic flow management
The fuel achieves fine atomisation under the air to permit combustion. The surrounding atmosphere moves with the earth.

COMMENT: The main gases found in the atmosphere are nitrogen and oxygen. The atmosphere contains less than 1% carbon dioxide and argon, and also traces of hydrogen, helium, krypton, neon, ozone and xenon.

atom /ætəm/ noun [pl atoms] 1. the smallest part in a chemical reaction. 2. Carbon, hydrogen, oxygen, nitrogen and sulfur are the most common elements in the atmosphere. A chemical reaction is the act of joining or fixing something to something. A wave becomes attenuated or loses strength as range increases. The ice detector is attached to the fuselage.

attachment /ətəʃmənt/ noun 1. the act of joining or fixing something to something. 2. The video camera is an accessory which can be attached. 3. The video camera is an accessory which can be attached.

attachment point /ətəʃmənt point/ noun a place on the airframe where something such as an engine is attached by means of bolts. Additional strength is required for the power plant attachment points.

attempt /ətəmpt/ noun a try. Any attempt to increase range by applying more power is of little or no benefit. A wave becomes attenuated or loses strength as range increases. The attached equipment points.

attach /ətəʃ/ verb to join or fix something to something. The ice detector is attached to the fuselage.

Augment /ətəmpt/ verb to lose power or strength. A wave becomes attenuated or loses strength as range increases.
attenuation /əˈtenjuəʃən/ noun loss of strength. Atmospheric attenuation is negligible until the upper end of the UHF band when it increases rapidly to limit the highest usable frequency to about 10 GHz.

attenuative /əˈtenjuətiv/ adjective becoming weaker. Rain has an attenuative effect.

attitude /ˈætjʊd/ noun 1. the position of the aircraft in the air in relation to the horizon. Angle of attack will vary with changes in engine speed and aircraft attitude. 2. nose down attitude the attitude of the aircraft when the nose is at a lower level than the tail. 2. a way of thinking and feeling about or of behaving towards something or somebody. He has an excellent attitude towards his training programme. He is positive and motivated in his training programme.

attitude heading reference system /ˌætjʊd ˈhɛdɪŋ ˈrɛfsərəns/, AHRS noun full form of AHRS, attitude heading reference system. A flight instrument that gives the pilot information about the position of the aircraft in the air in relation to the horizon. In light aircraft, the attitude indicator is situated on the instrument panel, directly in front of the pilot. Pitch, bank

COMMENT: The attitude indicator is sometimes referred to as the 'artificial horizon'. In instrument flight training, the attitude indicator is the primary reference instrument. It is positioned on the instrument panel directly in front of the pilot.

attract /əˈtrækt/ verb 1. to cause to draw near. If two magnets, with unlike poles are brought together, they will attract each other. To attract attention to behave in such a way that people will notice you. 2. to cause people to want to have or do something.

attraction /əˈtrækʃən/ noun 1. a force that draws things towards something. The strength of the magnetic force will depend, amongst other things, on the magnitude of attraction at the magnetic source. 2. a quality that causes people to want to have or do something.

Attractive /əˈtræktɪv/ adjective. Referring to something you feel you would like to have. After long talks, the prospective buyer made an attractive offer for the aircraft. Nice to look at.

audible /ˈɔːdɪəbl/ adjective possible to hear. The fire detection system should contain an audible warning device.

Audio /ˈɔːdɪəʊ/ noun an audible sound or sound signal. The diagram shows an amplitude modulation case where the lower frequency of the audio is about 300 Hertz.

augment /ˈɔːɡmənt/ verb to make larger by adding something. The sea breeze may augment the up-slope motion of an anabatic wind.

Aural /ˈɔːrəl/ adjective referring to hearing. The aural and visual alerts will continue until the crew take action to cancel them. (Note: Aural is sometimes pronounced /ˈɔːrəl/ to show the difference with oral.)

authorise /ɔːθəraɪz/, authorize verb to allow officially, to give permission. A signature is required to authorise the repair.

Authorised /ɔːθəraɪzd/, authorized adjective officially allowed, permitted. Aircraft with a maximum authorised weight of 12,500 lb or less. An authorized person a person who has been given power to act and perform particular tasks or duties.

Authoritative /ɔːθəˈrɪtɪv/ adjective in the manner of somebody with authority, in a commanding way. A crew must act in an authoritative manner.

Authority /ɔːθəˈrɪtɪ/ noun 1. complete control or power over something. While boarding, the captain has the authority to ask an unruly passenger to leave the aircraft. 2. an official or gov.
emment body with the power to make decisions
decisions

auto- /əˈtɔːr/ prefix automatic or automated

autogiro /ɔːˈtɔːrəʊ/ˈdʒɛərəʊ/ noun an aircraft that uses a propeller to produce forward motion and has an unpowered horizontal rotor for lift and stability

autoland /ɔːˈtɔːlænd/ abbreviation automatic landing

automatic /əˈtɔːmɪk/ adjective 1. done without needing to think. In the early stages of training, student pilots have to think about the use of the flying controls, but after a while these actions become automatic. 2. which works by itself without the need of an operator. The normal activation method is automatic.

automatic dependent surveillance /əˈtɔːmɪk ˈdɪˈpændənt səˌvɛləns/ an electronic surveillance system that uses data that aircraft provide automatically via a datalink and is able to identify and track the aircraft

automatic direction finder /əˈtɔːmɪk ˈdɑːrɪkʃən ˈfɪndər/ a radio navigation instrument that receives signals from non-directional radio beacons. The needle on the ADF indicator points toward the selected radio signal. Abbreviation ADF

automatic landing /əˈtɔːmɪk ˈlændɪŋ/ noun automatic flight control system capable of landing an aircraft ‘hands-off.’ Abbreviation autoland

automatic mixture control /əˈtɔːmɪk ˈmɪkstʃər kənˌtraʊl/ noun a subsystem in a piston engine which adjusts the flow of fuel to balance changes in air density

automatic pilot /əˈtɔːmɪk ˈpəʊlɪt/ noun full form of autopilot

Automatic Terminal Information Service /əˈtɔːmɪk ˈteɪmənˈʃən/ noun a recording of information played continuously on a specified radio frequency which gives pilots the current weather, runway in use, etc. Students listen to the ATIS to practise their language skills. Abbreviation ATIS

automation /əˈtɔːmɛʃən/ noun the automatic operation or automatic control of a piece of equipment, a process, or a system. Automation has speeded up baggage handling. Automation of throttle control has removed the need for pilots to monitor airspeed so closely. It is possible that the alternate source might provide a reduced level of automation.

autopilot /əˈtɔːpəlɪt/ noun a system which automatically stabilises an aircraft about its three axes, restores the original flight path following an upset and, in some systems, causes the aircraft to follow a preselected airspeed, altitude or heading. Full form automatic pilot. Abbreviation AP

auxiliary /ˈɔʊxiˈlɛəri/ adjective secondary, which is used when necessary to help or substitute for something else.

auxiliary gearbox /ˈɔʊxiˈlɛəri ˈɡɛbˌeɪs/ a gear box which allows main engine power to be used for secondary systems

auxiliary power unit /ˈɔʊxiˈlɛəri ˈpɜːrˈwɜːnt/ a small jet engine used to generate electrical power for air-conditioning, etc., when the aircraft is parked on the ground. Abbreviation APU

auxiliary rotor /ˈɔʊxiˈlɛəri ˈrəʊtər/ the tail rotor of a helicopter

availability /əˈveɪərəlɪti/ noun the fact of being available. The status of an airport is determined by the availability of suitable navigation aids.

available /əˈveɪərəbl/ adjective ready for immediate use. On a multi-engine aircraft, all the fuel must be available for use by any engine.

average /əˈveɪrədʒ/ adjective referring to an average. For load sheet purposes, an average weight of the passengers and crew members may be used.

noun the total divided by the number of items added: The average of 1, 3, 5, 9, 10 and 15 is 9 (1+3+5+9+10+15 = 40 ÷ 5 = 8)

verb to reach a particular figure as
in an average © Brake temperatures average around 500°C during normal operations.
avert /əˈvɑːrt/ verb to avoid © To avert a collision, he changed direction.
AVGAS /ˈævəɡeɪs/ abbreviation aviation gasoline
aviation /ˌɛvəˈʃən/ noun flying an aircraft © Wind speeds in aviation are usually given in knots.
aviation gasoline /ˌɛvəˈʃən(ə)n /ˈɡæsələn/ noun fuel used in piston-engined aircraft. Abbreviation AVGAS
aviation law /ˌɛvəˈʃən(ə)n ˈlɔ/ noun the laws relating to flying
aviation routine weather report /ˌɛvəˈʃən(ə)n ˈrʊtʃuən ˈweθə r ɪˈpɔrt/ noun a weather report issued regularly at intervals of an hour or half an hour describing weather conditions at an airport. Abbreviation METAR
aviator /ˌɛvəˈtiər/ noun a person who flies aircraft
avionics /ˌɛvəˈnɪks/ noun electronic communication, navigation, and flight-control equipment of an aircraft © The trainee engineer is doing an avionics course. Full form aviation electronics
avoid /əˈvɔɪd/ verb 1. to prevent something from happening © She just managed to avoid an accident. 2. to keep away from something © Avoid flying close to any person or vessel. © Cumulonimbus clouds and thunderstorms should be avoided by as great a distance as possible.
avoidance /əˈvɔɪd(ə)ns/ noun an act of avoiding something © Avoidance of thunderstorms is recommended it is recommended to keep away from thunderstorms
await /əˈweɪt/ verb to wait for © Await instructions from the flight deck.
aware /əˈweər/ adjective knowing and being conscious of something © The pilot should be aware of the positions of all other aircraft in the circuit.
awareness /əˈweərəns/ noun the state of being aware or conscious of something © Safety awareness the state of being familiar with and prepared for any situation in which safety is important
AWR abbreviation airborne weather radar
axial /ˈæksɪəl/ adjective referring to an axis
axial flow compressor /ˌæksɪəl flɔʊ kamˈpreʃər/ noun a compressor in which the flow of air is along the longitudinal axis of the engine © In spite of the adoption of the axial flow type compressor, some engine retain the centrifugal type.
axis /ˈæksɪs/ noun 1. an imaginary line around which a body rotates © The Earth rotates around its own axis. © An aircraft moves around three axes © vertical, lateral and lateral, © pitch, roll, yaw 2. a horizontal or vertical scale on a graph, often referred to as the X axis, the horizontal axis, and the Y axis, the vertical axis © The plot shows the effect of airspeed on lift with airspeed shown on the horizontal axis and lift on the vertical axis. (NOTE: The plural form is axes.)
axle /ˈæksəl/ noun a shaft on which a wheel is mounted © Unequal tyre-pressures, where two wheels are mounted on the same axle, will result in one tyre carrying a greater share of the load than the other. (NOTE: The wheel either turns round the axle or is fixed to the axle.)
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back /bæk/ verb (of the wind) to change direction in an anticlockwise direction. Opposite veer
backup /ˈbækəp/ adjective, noun a second or third system, instrument or computer disk available to be used if the first one fails. The backup system or the backup failed as well. Backup generators are driven by the engine.
backward /ˈbækwəd/ adjective directed towards the back. A backward movement.
backwash /ˈbækwɔʃ/ noun a backward flow of air produced by an aircraft propeller or jet engine.
baffle /ˈbæfl/ noun a metal plate for preventing the free movement of sound or liquids. Integral fuel tanks can be strengthened by fitting baffle plates.
baggage /ˈbægɪdʒ/ noun luggage, cases and bags which you take with you when travelling. One passenger had a huge amount of baggage. She lost one piece of baggage. (NOTE: The word luggage is also used in British English.)
baggage hall an area where arriving passengers pick up their baggage. Carry-on baggage small bags of limited size and weight that passengers are allowed to take with them into the cabin of an aircraft.
baggage allowance /ˈbægɪdʒələns/ noun the weight of baggage each air passenger is allowed to take free.
free. There is an accompanied baggage allowance of 18 kilos.
baggage handling /ˈbægɪdʒ hændlɪŋ/ noun the process by which passengers' baggage is loaded onto an aircraft, or unloaded and moved to the airport terminal.
balance /ˈbæləns/ noun 1. a state in which weight, force or importance are evenly distributed. The propelling nozzle size is extremely important and must be designed to obtain the correct balance of pressure, temperature and thrust. 2. the act of staying steady. 3. verb 1. to be opposite and equal in weight, force or importance to something else. The pressure exerted by the weight of the atmosphere above the level of the bowl balances a column of mercury in the tube. 2. to stay steady, especially when resting on the centre of gravity. ‘...balance refers to the location of the centre of gravity along the longitudinal axis of the aeroplane.’ [Civil Aviation Authority, General Aviation Safety Sense Leaflet]
ball /bɔl/ noun in an inclinometer, the round object which indicates if a turn is coordinated. To step on the ball to correct a skid or a slip by putting pressure on the rudder on the side to which the ball in an inclinometer has moved during a turn. If the ball has moved to the left, the turn can be corrected by putting pressure on the left rudder, and vice versa.
balloon /ˈbɔlən/ noun a large bag inflatable with hot air or gas to provide lift, but without power. Balloons are sent into the upper atmosphere to col-
connected to a pen.

A jet stream is a narrow band of high-altitude strong winds.

A barograph is an instrument for measuring and recording atmospheric pressure.

A barometer is an instrument for measuring the atmospheric pressure.

Barometric tendency is the amount of change in pressure with increase in altitude.

Barrel roll is a manoeuvre in which an aircraft turns completely over sideways while flying along.

Barrier is something such as a wall that prevents the movement of something else.

Elevation of the ground over which the aircraft flies can be a dangerous barrier to flight.

Base leg is the part of the airfield traffic circuit flown at approximately 90° to the direction of landing, followed by the final approach.

Basic area navigation is a standard of performance for navigation that requires an aircraft to remain within 5 nautical miles of the centreline of its course for 95% of the time.

Basic principle is a central or fundamental idea or theory.

Basic area navigation is the triangle of velocities.

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The operation of the auxiliary power unit is based upon the ability of a refrigerant to absorb heat.

The principle of vapour cycle cooling is based upon the ability of a refrigerant to absorb heat.

To avoid damage to the wheel bay, the nose wheel must be
aligned in a fore and aft direction during retraction. 2. a part of the coast that curves inwards to the Bay of Bengal

**bayonet fitting** /ˈbeɪənɒt ˈfɪtɪŋ/ noun a means of attaching something to something, in which an object with two side pins is inserted into a L-shaped slot in another object on some light-bulbs. Magnetic chip detectors are of the bayonet type fitting and can be removed and replaced very quickly.

**beacon** /ˈbɪkən/ noun a light or radio signal for navigational purposes. If the aircraft turns towards the beacon, signal strength will increase.

**beam** /biːm/ noun 1. a long thick metal bar used as a support. A beam is designed with a breaking load of 12 tons but when a three ton load is applied repeatedly, the beam may fail. 2. a shaft of light or radiation travelling in one direction, as from a cat’s head. The electron gun produces a stream of fast-moving electrons and focuses them into a narrow beam.

**beam sharpening** /ˈbiːm ˈʃɑːpənɪŋ/ noun the process of making a radio or light beam narrower. Any system employing beam sharpening is vulnerable to side lobe generation at the transmitter.

**bear** /bɛə/ verb 1. to carry or to hold. The undercarriage has to bear the weight of the aircraft on the ground. A rain-bearing cloud is a cloud carrying moisture which can fall as rain. 2. to bear something in mind to keep in mind. It should be borne in mind it should be remembered. Bearing in mind that she hadn’t flown for three weeks, the student pilot’s landings were very good. 3. to be able to deal with something without becoming distressed or annoyed. He can’t bear the noise. (NOTE: bearing – bore – borne) He can’t bear the heat. The heat is too much for him.

**bearing** /ˈbɛərɪŋ/ noun 1. the angle, measured in a clockwise direction, of a distant point, relative to a reference direction. To plot a position line from the non-directional radio beacon, it is first necessary to convert the relative bearing to a true bearing and then calculate the reciprocal. 2. a device containing steel balls or needles which allows free rotation of one component around another.

**Beaufort scale** /ˈbuːfət ˈskɜːl/ noun scale from 1–12 used to refer to the strength of wind. Wind speeds can be estimated by using the Beaufort scale of wind force.

**belly flop** /ˈbeli ˈflɒp/ noun same as belly landing.

**belly landing** /ˈbeli ˈleɪndɪŋ/ noun an emergency landing of an aircraft when the wheels have not come down.

**belt** /bɛlt/ noun 1. a long, relatively narrow area. A high-pressure belt is a long narrow area of high pressure. A precipitation belt is a long narrow area of rain, snow or hail. A rain belt is a long narrow area where rain falls. The cirrus cloud can be 900 miles ahead of the surface front with a rain belt as wide as 200 miles. 2. a loop of strong material connecting two pulleys or wheels, one driving the other.

**belt-driven** /ˈbɛlt ˈdrɪv(ə)n/ adjective of a wheel) moved by a belt linked to another wheel which, in turn, is moved by a motor or an engine. Aircraft generators are belt-driven or shaft-driven.

**belt-driven generator** /ˈbɛlt ˈdrɪv(ə)n ˈdʒɛnərətər/ noun a generator whose pulley is turned by a belt attached to an engine-driven pulley.

**bending** /ˈbɛndɪŋ/ verb to curve from a straight shape. (NOTE: bending – bent) To bend downwards to curve down from a horizontal position. To bend upwards to curve up from a horizontal position. The wings support the weight of the aircraft and they bend upwards in flight.

**bending load** /ˈbɛndɪŋ lɔːd/ noun a load that causes a structure to bend.

**Bernoulli’s principle** /bɜːrˈnʊliːz ˈprɪnsɪpl/ noun lift

**beware** /bɛr/ verb to be careful or to watch out for. Beware of carburettor icing. Beware of other aircraft in the circuit.
beyond /bəˈjʌn/ preposition further away than ○ The radio horizon extends beyond the visible horizon. ○ It is beyond his understanding he cannot understand it at all, it is too difficult for him to understand
bi- /bʌi/ prefix 1. two 2. twice
biannual /baɪˈænjuəl/ adjective happening two times a year ○ biannual inspection an inspection done twice every year
bill /bɪl/ noun US same as note noun 4
bimetallic /ˌbaɪmeɪˈtɛlɪk/ adjective made of two metals
bimetallic strip /ˌbaɪmeɪˈtɛlɪk ˈstrɪp/ noun a strip made of two separate metals with different rates of expansion, joined together side by side so that when the strip is heated, it bends and makes, or breaks, electrical contact ○ Circuit breakers use a bimetallic strip as the sensing element.
binary /ˈbaɪnəri/ adjective referring to a number system used in computers that only uses the digits 0 and 1 ○ Logic gates work with binary data. ○ Computers only process binary information.
biplane /ˌbaɪplɛn/ bi-plane noun an old aeroplane design with two pairs of wings, one above the other ○ Most of the aircraft used in the 1914–18 war were biplanes.
bird strike /ˈbɜːrd straɪk/ noun a collision between a bird and an aircraft that is flying
black box /ˈblæk ′bɒks/ noun same as flight data recorder (NOTE: It is often called the black box, although it is not black.)
blade /bleɪd/ noun a flattened part of a propeller or rotor ○ blade tip the end of the blade furthest from the centre of rotation ○ turbine blade a flat part in a turbine, which has an aerodynamic effect on the air
blade angle /ˈbleɪd ˌæŋɡəl/ noun the angle between the blade axis and the axis of rotation ○ With a variable pitch propeller, the blade angle may be changed in flight.
blade slip /ˈbleɪd slɪp/ noun a loss of propulsive power from a propeller caused by the difference between geometric and effective pitch
blade twist /ˈbleɪd ˈtwɪst/ noun 1. a reduction in propeller blade angle from root to tip 2. the unwanted variation in propeller blade pitch from root to tip caused by aerodynamic loads
blank /ˈb løŋk/ adjective 1. with nothing written, printed or drawn on it ○ a blank sheet of paper ○ a blank form a form without the details filled in 2. (of a TV, computer or video screen) with nothing appearing on it ○ When he returned to his computer, the screen was blank.
bleed air /ˈbliːd ər/ noun compressed air from the engine compressor used for cabin pressurisation or to drive other services ○ Bleed air from the right engine can power items normally powered by the left engine.
bleed screw /ˈbliːd skruː/ noun a small screw in highest point of a hydraulic system to allow for the removal of air or vapour
blind transmission /ˌblænd trəˈmɪʃn/ noun a transmission from one station to another in a situation where two-way communication cannot be established but where it is believed that the called station is able to receive the transmission
block /blɒk/ noun 1. a large mass of something ▲ verb 1. to prevent something such as a fluid from passing freely through a pipe or channel ○ At high altitude, any water condensing out of the fuel could freeze and block the filters. 2. to prevent a course of action ○ The government blocked attempts to prevent the building of the new airport.
blockage /ˈblɒkɪdʒ/ noun 1. a collection of something blocking a pipe, narrow channel, filter, etc. ○ Ice crystals may form to cause a blockage of the fuel filter. 2. the state of being blocked ○ The blockage was caused by ice.
blow /blɔʊ/ noun 1. an impact ○ a blow on the head 2. a disappointment ○ The news of her failure in the examination was a severe blow. ▲ verb 1. (of the wind or air) to move ○ The sea breeze may blow almost parallel to the coast. 2. (of
a fuse) to break, as it should, when the circuit is overloaded (NOTE: blowing –
blow – blown).

blow-back /ˌbləʊbæk/ noun a sudden movement of fluid in the opposite
direction to the general flow. A sudden
release of pressure may cause a blow-
back.

blower /ˈbləʊər/ noun a device for
blowing air. Air for combustion is
obtained from a blower.

board /bɔːrd/ noun 1. a flat, square or
rectangular piece of wood or other
material. 2. on board on an aircraft.
The flight plan records the callsign and
the number of people on board. verb
to get on to an aircraft. In an emer-
gency, many passengers only remember
the entrance by which they boarded the
aircraft.

boarding gate /ˈbɔːrdɪŋ ɡeɪt/ noun
the door through which passengers
leave the terminal building to get on to
an aircraft. Boarding gates 1 – 10 are
on the left.

boarding pass /ˈbɔːrdɪŋ pæs/ noun
a temporary pass, issued at the check-in
desk, which allows the holder to board
the aircraft. Boarding passes must be
shown at the gate. (NOTE: The plural
form is boarding passes.)

boarding steps /ˈbɔːrdɪŋ stɛps/ plural
noun stairs used by passengers and
crew to get on board an aircraft. Pass-
sengers had to wait in the aircraft for 15
minutes before the boarding steps were
put in position.

boarding time /ˈbɔːrdɪŋ ˈtaɪm/ noun
the time when passengers are due to
board the aircraft. Boarding time is at
13.30 hrs.

body /ˈbodi/ noun 1. the whole of a
person or an animal. 2. the main part
of a person, but not the arms or legs. 3.
the main part of an aeroplane, system, text,
etc. 4. the body of an aircraft is also
called the 'airframe'. 5. a flow-control
valve consists of a body and a floating
valve. 4. a large mass of liquid or gas.

body of air a large quantity of air
behaving in a particular way. 5. an
object. Acceleration is the rate of
change of velocity of a body.

boil /bɔɪl/ verb to heat a liquid until it
reaches a temperature at which it
changes into gas. Water boils at
100°C. The boiling point of water is 100°C.

bolt /bɔːlt/ noun 1. a metal rod with a
head, which screws into a nut. The two
halves of the wheel are held together by
bolts. 2. bolt of lightning one electric-
ical discharge of lightning. verb to
attach with a bolt. Aircraft wheels are
constructed in two halves which are
bolted together.

bond /bɔnd/ noun the power that
holds surfaces together, when they are
joined using heat, cold, chemicals or
glue. The de-icing boot breaks the
bond between the ice and the outer skin.

boost /bɔːst/ noun an increase or
improvement. The improvement in a
country’s economy often gives a boost
to the airline industry. verb 1. to make
or to help something increase. An oil
pump boosts engine oil pressure. 2. to
increase the instructor’s comments
boosted the student pilot's confidence.

booster /ˈbɔːstər/ noun a device which
increases the force or amount of
something.

booster pump /ˈbɔːstər pʌmp/ noun
a centrifugal pump often positioned at
the lowest point of a liquid fuel tank to
ensure positive pressure in the supply
lines to the engine. Fuel is fed through
a filter and a booster pump. The pur-
pose of the booster pump is to prevent
fuel aeration.

boot /bɔt/ noun one of a set of flat,
flexible tubes bonded to the leading
dge or wings and other surfaces which,
when pressurised with fluid, break up
ice. The boots on the leading edge of
the wings were damaged by hail.
bottleneck /'bot(ə)lnək/ noun a buildup of air traffic causing delays in taking off or landing

bound /baʊnd/ adjective bound for on the way to a aircraft bound for Paris a the Copenhagen-bound flight the flight on the way to Copenhagen a outward bound leaving home, especially for another country

boundary /'boun(d)əri/ noun a physical or imaginary limit between two areas a The boundary between two air masses is called the frontal surface.

boundary layer /'boundəri ləə/ noun the layer of fluid next to the surface over which it is flowing and, because of friction, travelling more slowly than layers further from the surface

bowser /'baʊzə/ noun a mobile fuel tank for refuelling aircraft It is important to prevent the possibility of an electrical spark by earthing the aircraft and the bowser.

Boyle’s Law /'bɔɪlz laɪ/ noun a scientific principle that states that the volume of a given mass of gas, whose temperature is maintained constant, is inversely proportional to the gas pressure

brace /breɪs/ verb 1. to strengthen a construction using cross-members and/or wires a Early aircraft were of the braced type of construction. 2. to take a protective body position in preparation for a crash landing a The cabin-crew will repeat the ‘brace’ order and brace themselves. a to brace yourself to quickly prepare yourself mentally and physically for what is shortly to happen

brace position /'breɪs pə.zɪʃ(ə)n/ noun the position that a person is recommended to adopt before impact in a crash, protecting the head with the arms and bringing the legs up underneath the chest

bracket /'brækət/ noun 1. a metal support, often triangular or L-shaped a component bracket a metal device to attach and support a component 2. a range of frequencies within a band of radio frequencies a Terminal VOR is in the frequency bracket 108–112 MHz

round brackets the printing symbol ( ) used to separate words in a sentence, or within a text a square brackets the printing symbol [ ] used to enclose some types of text

brake /breɪk/ noun a device for stopping a vehicle or a machine a parking brake a brake used to prevent the aircraft moving after it has come to a stop a to slow down or to stop by pressing the brakes a He had to brake hard after landing in order to turn off at the correct taxiway. (NOTE: braking - braked)

brake drum /'breɪk drʌm/ noun a round hollow part of the brake mechanism, which is attached to the wheel and against which the brake shoes rub, thus preventing the wheel from turning a brake drum

braking /'breɪkɪŋ/ noun the act of putting on the brakes to slow down or to stop a adjective slowing down or a the braking effect of drag a action breaking load /'breɪkɪŋ ləʊd/ noun a load capable of being supported before a structure breaks

breather /'briːðə/ noun 1. a pipe connecting the crankshaft to the atmosphere to prevent build-up of crankcase pressure 2. a short rest (informal) a to take a breather to have a short break, to relax before starting again

breeze /'briːz/ noun a gentle wind especially near the coast a There’s no wind, not even a breeze. a land breeze a light wind which blows from the land towards the sea a Land and sea breezes occur in coastal areas. a sea breeze a gentle wind which blows from the sea towards the land a The strength of the sea breeze decreases with height.

brief /'briːf/ adjective short a brief report a brief letter a letter containing only a few words a noun general instructions to enable somebody to perform their duties a The inspector’s brief is to find out as much as possible about the causes of accidents. a verb to give basic information to somebody a Before take-off, cabin crew must brief passengers on the location and use of emergency exits and life jackets.
briefing /ˈbriːfɪŋ/ noun a short meeting to enable instructions and basic information to be given

British Isles /ˈbrɪtɪʃ ɪzl/ plural noun the islands which make up Great Britain and Ireland ○ The climate of the British Isles is affected by the Atlantic Ocean.

British thermal unit /ˈbrɪtɪʃ ˈθɜːm(ə)l/ noun the amount of heat needed to raise the temperature of one pound of water by one degree Fahrenheit. Abbreviation Btu

brittle /ˈbrɪtl(ə)/ adjective having a tendency to break easily, like thin glass ○ Absorption of oxygen and nitrogen from the air at temperatures above 1,000° F makes titanium brittle.

BRNAV abbreviation basic area navigation

day /brəd/ adjective 1. very wide ○ a broad river 2. wide or general ○ Three broad categories of aircraft are considered – rotary wing aircraft, light single-engine aircraft and twin-engine aircraft. Opposite narrow

broadcast /ˈbrɔːstʊkast/ verb to transmit, often to a large number of people, a radio signal or message which requires no answer ○ The cabin crew can use the public address system to broadcast messages to passengers only. (NOTE: broadcasting – broadcast) noun a transmission of information relating to air navigation that is not addressed to a specific station or stations

broadly /ˈbrɔːdlɪ/ adverb widely or generally ○ broadly speaking generally speaking

brush /brɒʃ/ noun 1. a tool that has lengths of hair or wire fixed into a handle and is mainly used for painting or cleaning 2. a small, replaceable block of carbon which rubs against the surface of a commutator in a generator or electric motor ○ At high altitude, the air becomes drier and this causes a greatly increased rate of wear on the brushes.

buckle /ˈbʌk(ə)/ noun a metal part of a belt used for joining the two ends together ○ verb to bend out of shape because of heat or force ○ Overheating will make the battery plates buckle.

buffet /ˈbʌfɪt/ noun a shaking movement of the aircraft caused by the breakdown of the airflow over the upper surface of the wing ○ Large aircraft use a stick shaker to supplement the natural stall warning of buffet. ○ buffet to push around with great force, as by water or wind ○ The storm buffeted the coast. ○ The aircraft was buffeted by strong crosswinds as it made its final approach to land.

COMMENT: Buffet is a warning to the pilot that the smooth airflow over the wing is breaking down and that he should take corrective action to prevent a stall.

buffeting /ˈbʌfɪtɪŋ/ noun an irregular shaking of a part or the whole of an aircraft during flight, usually caused by strong winds

buffet speed /ˈbʌfɪt spɪd/ noun the speed at which buffet is first noticed

bug /bʌɡ/ noun a fault in computer software which causes the program to operate incorrectly

build up /bɪld ˈAp/ verb to form by accumulation ○ In icing conditions, ice builds up on the leading edges. ○ built-up (NOTE: building up – built-up) noun a transmission of information relating to air navigation that is not addressed to a specific station or stations

build-up /bɪld-up/ adjective ○ build-up area an area which is full of houses, shops, offices, and other buildings, and with very little open space

bulb /ˈbʌlb/ noun 1. a glass ball inside a lamp that gives electric light ○ If a lamp does not work, the bulb may need replacing. 2. something shaped like a lamp bulb ○ The most common type of hygrometer is the wet and dry bulb thermometer arrangement.

bulkhead /ˈbʌklɛd/ noun a dividing partition across the structure of the fuselage separating one compartment from another for reasons of safety or strength ○ A fireproof bulkhead is provided to separate the cool area of the engine from the hot area.
bulletin /'bʊltɪn/ noun a short report or information on a situation. A terminal aerodrome forecast bulletin may consist of forecasts for one or more aerodromes.

BUMF mnemonic

 burble /bɜːbl/ noun a break in the flow of air around an aircraft’s wing, which leads to turbulence

burst /bɜːst/ noun 1. a minor explosion caused by increased pressure. The risk of tyre burst through overheating is increased by hard application of the brakes. 2. a very short period of activity followed by no activity. The ground installation transmits a code in two short bursts. burst of energy a very short period of energy. verb to explode because of increased pressure or puncture. Metal debris on the runway may cause a tyre to burst. (NOTE: bursting – burst)

busbar /bʌsbær/ noun an electrical conductor used to carry a particular power supply to various pieces of equipment. Complex busbars are thick metal strips or rods to which input and output connections are made.

button /'bʌt(ə)n/ noun a little round disc which you push to operate something, e.g. to ring a bell

Buys Ballot’s Law /bɔɪz 'bɔːləts/ noun a rule for identifying low pressure areas, based on the Coriolis effect

COMMENT: In the northern hemisphere, if the wind is blowing from behind you, the low pressure area is to the left, while in the southern hemisphere it is to the right.

buzz /bɔz/ verb to fly low in an aircraft over people or buildings, or to fly across the path of other aircraft

bypass /'bæpɑs/ noun 1. an alternative pipe, channel, etc. A turbine bypass in the form of an alternative exhaust duct is fitted with a valve. 2. same as shunt
C

C symbol 1. Celsius 2. centigrade

CAA  abbreviation Civil Aviation Authority

cabin /ˈkeɪbən/ noun a passenger compartment in an aircraft ○ Air enters at the front of the cabin and leaves at the rear.
cabin attendant /ˈkeɪbən əˌtɛndənt/ noun member of the flight crew who looks after passengers, serves food, etc. ○ If you need something, press the call button and a cabin attendant will respond within a few minutes. Also called flight attendant

cabin compressor and blower system /ˈkeɪbən kɒmprəza əˌˈbləʊər ˌsɪstəm/ noun part of the air conditioning system for the cabin

cabin crew /ˈkeɪbən kruː/ noun airline staff who are in direct contact with the passengers and whose in-flight responsibilities include: ensuring correct seating arrangements, serving food and attending to the general well-being of passengers, etc.
cabin environment noun the conditions inside the aircraft cabin, including the temperature, the space, the colour scheme, the seating arrangements, etc.
cabin pressure /ˈkeɪbən ˈpreʃə/ noun the pressure of air inside the cabin which allows people to breathe normally at high altitudes

cabin pressurisation /ˈkeɪbən ˈpreʃərəˌzəʃən/ noun the maintenance of an acceptable atmospheric pressure in an aircraft while flying at high altitude ○ At 35,000 ft (feet) passengers can breathe freely because of cabin pressurisation.
cable /ˈkeɪbl(ə)/ noun 1. thick metal wire ○ control cables thick metal wire linking the pilot’s cockpit controls to control surfaces such as the elevators and ailerons 2. a thick metal wire used for electrical connections ○ Earth return is by cable to the negative pole of the battery.
cabotage /ˈkeɪbətɑː/ noun the right of a country to operate internal air traffic with its own airlines and not those of other countries
calculate /ˈkælkjuːleɪt/ verb to find out an answer to a problem by working with numbers ○ The total flight fuel can be calculated by multiplying the time of the flight by kilograms of fuel per hour.
calculation /ˈkælkjuːleɪʃən/ noun an act of finding out an answer to a problem by working with numbers
calculator /ˈkælkjuːleɪtər/ noun an electronic machine for making calculations ○ Students are not allowed to use calculators in the examination.
calibrate /ˈkælbreɪt/ verb to adjust the scale or graduations on a measuring instrument or gauge ○ The international standard atmosphere is used to calibrate pressure altimeters.
calibrated airspeed /ˈkælbreɪtɪd ˈɛəspɪd/ noun indicated airspeed corrected for instrumentation and installation errors. Abbreviation CAS
calibration /ˈkælɪbreɪʃən/ noun the adjusting of the scale or graduations
call button

on a measuring instrument or gauge. The international standard atmosphere is used for the calibration of instruments.

call button /'kɔl ˈbat(ə)n/ noun a button, often on the arm of a passenger seat, which can be pushed when you need help from an attendant.

callsign /'kɔlˌsain/ noun a series of words and/or letters and/or numbers used to identify an aircraft or station. The aircraft’s callsign is ‘College 23’. VOR stations transmit a two or three letter aural Morse callsign.

calorie /'kaləri/ noun the amount of heat required to raise the temperature of 1 gram of water by 1°C, equal to 4.186 joules. After 2 calories have been released the temperature will have risen 2 degrees i.e. to 0°C, and so the freezing process ceases temporarily. Abbreviation cal.

calorific /'kælərɪfɪk/ adjective referring to calories. The calorific value of a fuel is an expression of the heat or energy content released during combustion.

cam /kæm/ noun an oval or egg-shaped wheel which, when rotating, converts circular motion into reciprocating motion. In a piston engine, the shape of each cam is designed to give the correct amount of opening to the valve.

CAMFAX /'kæmˈfæks/ noun the civil aviation meteorological facsimile network.

camplate /'kæmplət/ noun a rotating or non-rotating plate with cams on it. The fuel pump consists of a rotor assembly fitted with several plungers, the ends of which bear onto a non-rotating camplate.

camshaft /'kæmʃaft/ noun a rotating shaft carrying cams, which opens and closes valves in a piston engine. As the camshaft rotates, the cam will transmit a lifting force.

canard /'kænərd/ noun a projection similar to a small wing fitted close to the nose of an aircraft and designed to increase its horizontal stability.

candela /ˈkændələ/ noun the SI unit of brightness of a light. The red and green wing tip navigation lights must be at least 5 candela. (Note: It is usually written cd with figures.)

candle power /'kændələpə/ noun a unit to measure the brightness of a light. Estimation of visibility is achieved by noting the distances at which lights of a known candle power can be observed.

canopy /'kænəpi/ noun 1. A transparent cover, typically on some fighters, light aircraft and gliders, designed to slide backwards and forwards or hinge upwards to allow pilots to enter or leave an aircraft. 2. A covering to protect people in a life raft. The canopy should be erected to provide protection from the weather.

cantilever /'kæntɪləvər/ noun a beam fixed and supported at one end only. The mainplanes or wings are of cantilever design.

cap /keip/ noun a top or lid. The exhaust valve cap.

CAP abbreviation Civil Aviation Publication.

capability /'keipəˈbɪləti/ noun the capacity or ability to do something. The flare has a day and night capability: the flare is effective in daylight and in the dark.

‘France has a large capability in the areas of commercial aviation training and simulation’ [Civil Aviation Training].

capable /'keipəb(ə)l/ adjective competent, having an ability. Aircraft used in aerobatics must be capable of withstanding the extra loads imposed on the airframe by the manoeuvres. In most modern multi-engine jet transport aircraft, each fuel tank is capable of feeding any engine. A capable person a person who works well.

capacitance /'kæpəsɑntəns/ noun the ability of a system of conductors and insulators to store an electrical charge when there is a positive discharge between the conductors. If the supply frequency is low, the voltage has more
time to build up a larger charge, or capacitance. (NOTE: Capacitance is measured in farads and can either be a fixed amount or variable amount.)

**capacitive** /kə'pæsitɪv/ adjective referring to the ability of a system of conductors and insulators to store an electrical charge. 

**overspeed** is usually a fault in the constant speed drive unit which causes the generator to over-speed and damage the capacitive loads on the aircraft.

**capacitor** /kə'pæsitər/ noun a system of conductors and insulators which store electrical charge (NOTE: A capacitor is used in a circuit to store energy for a short while.)

**capacity** /kə'pæstɪli/ noun 1. the ability to do something easily. 2. the amount of something which a container can hold. 

**battery capacity** the amount of electrical energy a battery can store and deliver expressed in ampere hours. 3. the ability of an ATC system, in a given area, to provide a normal service, expressed in numbers of aircraft.

...a 500 to 600 seat ultra-high capacity type aircraft is now being studied by Airbus Industrie and Boeing’ [Flight International 1–7 May 1996]

**capillary** /kə'pærɪli/ noun a very fine or narrow tube

**capillary action** /kə'pærɪli ˈæksʃən/, **capillary flow** /kə'pærɪli fləʊ/ noun the action by which a liquid rises up a narrow tube

**capsule** /ˈkeɪpsjuːl/ noun a small closed container

**captain** /ˈkeɪptɪn/ noun the person in charge of an aircraft. The captain asked all passengers to remain seated until the aircraft had come to a stop.

**captive** /ˈkæptɪv/ adjective not free to move

**captive balloon** /ˈkæptɪv bəˈluːn/ noun a balloon which, when in flight, is attached to the ground by a long cable

**carbon** /ˈkɑːbən/ noun 1. a non-metallic element, which is a component of living matter and organic chemical compounds and is found in various forms, e.g. as diamonds or charcoal. 2. a black material with good electrical properties

**carbon brush** /ˈkɑːbən brəʃ/ noun a small, replaceable, carbon block found in electric motors, generators and alternators, which provides the passage of electric current

**carbon deposits** /kɑːbən dɪˈpɒzɪts/ plural noun residues of burnt oil deposited in the combustion chamber, etc., in the course of the combustion process. Carbon deposits on a spark-plug electrode may cause misfiring.

**carbon dioxide** /ˌkɑːbən ˈdɔɪd/ noun a colourless, odourless, non-toxic gas found in the atmosphere, and also used in fire extinguishers and fizzy drinks. Carbon dioxide can be solidified at low temperature to produce dry ice. Symbol CO₂

**carbon fibre** /ˌkɑːbən ˈfaɪbr/ noun a thin, light and very strong strand of pure carbon which can be combined with other materials to make them stronger

**carbon monoxide** /ˌkɑːbən məˈnɔksaɪd/ noun a colourless but poisonous gas from incomplete combustion found in the exhausts of spark ignition engines. Symbol CO

**carburation** /ˈkɑːbjuːrəʃən/ noun the process of mixing fuel with air in a carburettor. Carburation must ensure that rapid and complete burning will take place within the cylinder.

**carburettor** /ˈkɑːbərɛtər/ noun a device for mixing air with fuel in the right quantities before combustion. Most carburettors are installed so that they are in a warm position.

**carburettor heat** /ˈkɑːbərɛtər hɛt/ noun a system for keeping the carburettor and associated components free of ice

**carburettor icing** /ˈkɑːbərɛtər ˈaɪsɪŋ/ noun a process by which, under particular conditions, ice forms in the venturi tube of the carburettor

**cardioid** /ˈkɑːrdiəd/ adjective shaped like a heart. 

The cardioid polar dia-

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carousel

A rotating platform from where arriving passengers can pick up their baggage. Baggage from flight AC123 is on carousel No. 4.

carriage /ˈkærɪдж/ noun 1. The act of carrying. 2. Regulations require the carriage of life rafts when flying over water.

carrier /ˈkerɛri/ noun 1. An aircraft involved in an accident. 2. Individual carriers assign codes to aircraft.

carrier wave /ˈkerɛri wɛrv/ noun A radio signal that is transmitted continuously at a constant amplitude and frequency. It has only one pair of usable sidebands each at about one sixth of the signal strength of the carrier.

carry /ˈkerɛri/ verb To take something from one place to another. The aircraft was carrying 120 passengers.

cartridge /ˈkɑrtɪdʒ/ noun A removable unit for an air filter. Cabin air filters normally consist of a casing, housing a replaceable filter cartridge.

Cathode /ˈkæθəd/ noun A negative electrode or terminal. The cathode is a metal cylinder fitted with an internal heater.

cathode ray tube /ˈkæθəd rɛtʃəubl/ noun A high-vacuum tube in which cathode rays produce an image on a screen such as a TV screen.

cause /kɔz/ noun Something that makes something else happen. If a problem occurs in the spoiler system, a master caution light illuminates.

casing /kæsɪŋ/ noun A cover that encloses a piece of equipment. Ammonial and outer air casing form a tunnel around the spine of the engine.

carry - carried /kærɪd/ verb To take something from one place to another or something.

case /kɛs/ noun 1. An outer covering, housing or jacket. 2. Cooling air is directed through passages in the engine case control engine case temperature.

casing - cased /kæsɪŋ/ noun A cover that encloses a piece of equipment. Ammonial and outer air casing form a tunnel around the spine of the engine.

catastrophe /ˌkætəstrəfi/ noun A very bad event or accident, a disaster. Although the family were not at home when it happened, the crash which destroyed their house was a catastrophe for them.

catastrophic /ˌkætəstrəfi k/ adjective Terrible, disastrous. In a catastrophic accident where many persons may be disabled, those who show signs of life should be rescued first.

categorise /ˌkætərɪzaɪ/ verb To put into groups, classes or categories. Figure 2 categorises the types of wave by frequency band.

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throughout the area controlled by the ECAC.

**Central Standard Time** /ˈsentral ˈstændəd ˈtɜːri/ noun the time zone of the east-central part of the USA and Canada, 6 hours behind GMT.

**centre** /ˈsentər/ noun 1. the middle ○ The plane of the great circle passes through the centre of a sphere. ○ a centre of a circle mid-point of a circle, point in the middle of a circle 2. a main building or office ○ Area Forecasting Centre ○ verb to move to a central position ○ Centre the control column. (NOTE: Cen-
tred – centring; the US English is cen-
tered – centering.)

**centre fix** /ˈsentər fiks/ noun same as self-positioning.

**centreline** /ˈsentəlam/ noun a painted or imaginary line running along the centre of the runway (NOTE: It is also written centre line; written centerline in US English.)

**centre of gravity** /ˈsentər əv ˈɡrævəti/ noun the point at which a body can be balanced ○ Distribution of the tanks and the fuel in the tanks is vital in maintaining the aircraft centre of gravity and trim. Abbreviation CG. Comment: If the centre of gravity is outside the limits, the aircraft may be difficult or impossible to control.

**centrifugal** /ˈsentrifəɡ(ə)l, ˈsentɪfɪɡ(ə)l/ adjective moving away from the centre ○ The blades must be strong enough to carry the centrifugal loads due to rotation at high speed.

**centrifugal force** /ˈsentrifəɡ(ə)l ˈfɔːs/ noun outward force caused by turning motion.

**centrifuge** /ˈsentrifʌdʒ/ noun a device which uses centrifugal force to separate or remove liquids © The rotating vanes of the breather centrifuge the oil from the mist.

distributor panels before passing through the porous steel outer skin. **CB** abbreviation cumulonimbus **cc** /ˈsɪl/ abbreviation cubic centi-

metres **cd** symbol candela **CDI** abbreviation course deviation indicator **cease** /ˈsiː/ verb to stop ○ If fuel, oxygen or heat is removed from the fire tri-

angle, combustion will cease. **ceiling** /ˈsəlɪŋ/ noun 1. the highest point 2. the greatest pressure height that can be reached ○ The aircraft has a ceiling of 50,000 ft. **celestial** /ˈsɛlestɪəl/ adjective referring to the sky ○ celestial navigation navigation by using the stars in the sky. **cell** /ˈsɛl/ noun 1. a system of positive and negative plates for storage of electricity that form a battery ○ A battery is a device which converts chemical energy into electrical energy and is made up of a number of cells. 2. the central part of a thunder cloud ○ The life cycle of the thunderstorm cell ends when the downdraughts have spread throughout the cloud. **Celsius** /ˈsɛlsiəs/ noun a scale for measuring temperature in which water freezes at 0° and boils at 100°. Symbol C. Compare Fahrenheit **center** /ˈsentər/ noun, verb US same as centre **centerline** /ˈsentəlam/ noun US same as centreline **centigrade** /ˈsɛntɪɡred/ noun a scale for measuring temperature in which water freezes at 0° and boils at 100°. Symbol C. Compare Fahrenheit **centimetre** /ˈsentɪmətər/ noun a measure of length that is equal to one hundredth of a metre (NOTE: 2.54 cm = 1 inch.) **central** /ˈsentrəl/ adjective located in the centre or in the middle ○ The control knob is moved from the central position. **Central Flow Management Unit (Brussels)** /ˈsentərəl flɔʊ ˈmænɪɡmen t juˈnɪt ˈbrʌsələ/ noun a central agency in Brussels that is responsible for air traffic management...
centripetal /sentriˈpɪtəl/ adjective moving towards the centre

centripetal force /senˌtrɪpiˈtɔrəl/ the force working in opposition to centrifugal force. The magnitude of the centripetal force varies with the square of the wind speed. In a turn, lift provides the centripetal force.

certain /ˈsɜːr(t)ə(n)/ adjective 1. particular, some at certain times under certain circumstances.

Certificate noun /ˈsɪfɪskeɪt/ an official document which states that particular facts are true. An authorised person may require production of the Certificate of Airworthiness. Abbreviation C of A

Certification /ˈsɜːfɪkrəˈʃiʃən/ noun the process of giving certificates. The inferential method of ice detection is used on flight trials for certification of aircraft.

certify /ˈsɪfɪsfai/ verb to authorise or permit the use of something. The aircraft is certified for aerobatic flight.

CFI abbreviation chief flying instructor

CFMU abbreviation Central Flow Management Unit

CFRP abbreviation carbon fibre reinforced plastic

Chalk /ʃɑːk/ noun a soft white limestone rock that may be used in powder form or as a shaped stick for writing with Oil, which is trapped in the defects, is absorbed by the chalk thus indicating their positions.

Chamber /ˈtʃæmbr/ noun a small enclosed compartment

Chandelle /fænˈdel/ noun a steep climbing turn in which an aircraft almost stalls as it uses momentum to increase its rate of climb

Channel /ˈʃænəl/ noun a special frequency band for the transmission of radio signals. The system operates on VHF communications between 118 and 135.95 MHz giving 360 channels at 50 kHz spacing.

Character /ˈkærəkta/ noun 1. a quality or set of qualities which make something different and separate from something else. The circulation of the atmosphere is zonal in character.

Characterise /ˈkærəktaɪzd/ to be characterised by to have qualities or features which make it different and separate from other things. The stratosphere is characterised by a temperature structure which is steady or increases with height.

Characteristic /ˈkærəktaɪstɪk/ adjective typical of a class or group of things. A characteristic feature is observed in the atmosphere in question. A feature or quality making something different or separate from something else.

Chandelle noun a steep climbing turn in which an aircraft almost stalls as it uses momentum to increase its rate of climb when handling aircraft.
An installed battery becomes fully charged by the aircraft generator. A battery charger device for putting an electrical charge into a battery. A turbocharger charger /ˈtʃəʊkər/ noun a battery charger device for putting an electrical charge into a battery.

charged particles atmospheric particles which have either a positive or negative electrical charge. 2. to take money for a service. We do not charge for overnight parking.

charger /ˈtʃəʊkər/ noun a battery charger device for putting an electrical charge into a battery.

turbocharger chart /ˈtʃɑːt/ noun a map for navigational purposes. A significant weather chart a weather chart with important weather information marked on it.

check-in /ˈtʃekɪn/ noun the time at which passengers register before a flight. A check-in counter /ˈtʃekɪn kɔntɜːr/ noun a check-in counter where passengers check in.

checklist /ˈtʃeklɪst/ noun a list of items, often in booklet form, to be checked in a given sequence. Before every flight, the pilot should perform pre-flight checks using a checklist.

chemical /ˈkɛmɪk(ə)l/ adjective referring to chemistry. A chemical reaction. A substance used in or made by a chemical process. A chemical such as anti-ice for propellers.

chemistry /ˈkemɪstri/ noun 1. the science of chemical substances and their reactions. 2. the nature of something. The basic chemistry of fire can be illustrated by the three sides of a triangle representing fuel, oxygen and heat.

chief /ˈtʃɪf/ adjective most important, main. The chief factors the most important factors.

chief flying instructor /ˈtʃɪf ˈflɛɪɪŋ ɪnstrʌktaʊr/ noun the senior rank of flying instructor. Abbreviation CFI.

chok /ˈtʃɒk/ noun a wooden or metal device placed in front of the wheels of a parked aircraft to prevent it from moving. The accident happened because the chocks had been removed before the engine was started.

choke /ˈtʃɔk/ noun a valve in a carburettor, which controls the amount of air combining with fuel. A choked nozzle a blocked or partly-blocked nozzle. 2. to stop breathing because you have inhaled water or smoke.

choke tube /ˈtʃɔktjuːb/ noun same as venturi. An increase in rpm increases the speed of air passing through the choke tube or venturi.

chopper /ˈtʃɒpər (informal)/ noun same as helicopter. A chopper to transport something or somebody by helicopter, or to travel by helicopter.

chord /kɔrd/ noun the shortest distance between the leading and trailing edges of an airfoil.

chute /ˈtʃut/ noun same as parachute. A chute.

circle /ˈsɜːkl/ noun a line forming a round shape, or a round shape formed by objects or people. They stood in a circle on the tarmac. A great circle direction an imaginary circle on the surface of the Earth which lies in a plane passing through the centre of the Earth.

circuit /ˈsɜːkɪt/ noun 1. a complete route around which an electrical current can flow. 2. the pattern of take-off,
circuit board

climb-out, turn onto crosswind leg, turn onto downwind leg, turn onto base leg, turn onto final approach and landing. When carrying out practice landings at an aerodrome, the pilot should keep a sharp lookout for other aircraft in the circuit.

circuit board /ˈsɜːkɪt bɔːd/ noun an insulating board which holds components connected into an electrical circuit.

circuit-breaker /ˈsɜːkɪt ˈbreɪkə/ noun a small protective device in the circuit which blows or breaks before a dangerous overload of current arises.

circuitry /ˈsɜːkɪtrɪ/ noun a system of electrical circuits. In an anti-skid braking system, circuitry is employed which can detect individual wheel deceleration.

circular /ˈsɜːkʃəl/ adjective shaped like a circle. Anodes are circular plates with centre holes. Semi-circular shaped like a half-circle. A document distributed to a large number of people. An aeronautical information circular.

circular slide rule /ˈsɜːkʃəl ˈsləd ryl/ noun a calculating device on which all manner of conversions and complex calculations can be made to assist in flight planning.

circulate /ˈsɜːkʃələt/ verb to move round in such a way as to arrive at the point of departure. Water circulates via the radiator and pump through to the engine block itself.

circulation /ˈsɜːkʃələn/ noun the act of moving round in such a way as to arrive at the point of departure. The general circulation is indicated by the arrows. Cyclonic circulation the circulation of air which, if viewed from above, is anticlockwise in the northern hemisphere and clockwise in the southern hemisphere.

circulatory /ˈsɜːkʃələrɪ/ adjective moving around a circuit. A self-contained re-circulatory oil system.

circumference /ˈsɜːkəmfərəns/ noun the distance around the edge of a circle. The angle subtended by an arc equal to one 360th part of the circumference of a circle is called one degree.

circumstance /ˈsɜːkəmstəns/ noun a condition which affects something in a given situation. In some circumstances, under certain circumstances, in some particular situations.

cirro-/ˈsɪrəʊ/ prefix high altitude, i.e. above 20,000 feet.

cirrocumulus /ˈsɪrəʊkʌmjʊləs/ noun a layer of broken cloud at about 20,000 feet.

cirrostratus /ˈsɪrəʊstrətəs/ noun a layer cloud at about 20,000 feet.

cirrus /ˈsɪrəs/ noun a high cloud in a mass of separate clouds which are formed of ice crystals.

Civil Aviation Authority /ˈsɪvɪl ˈkɒɪvɪəʃən ˈɒrɪˈdʒɪneɪʃən/ noun the organization which licences operators, aircraft and employees for non-military, especially commercial aviation. Abbreviation CAA.

Civil Aviation Publication /ˈsɪvɪl ˈkɒɪvɪəʃən ˈpʌblɪkeɪʃən/ noun a book, etc., published by the Civil Aviation Authority, each publication having its own reference number. The procedure for obtaining a bearing can be found in CAP 413. Abbreviation CAP.

COMMENT: CAA (Civil Aviation Authority) publications are referred to as CAPs and each has a reference number for identification: the procedure for obtaining a bearing is described in CAP 413.

clad /klæd/ verb to protect by covering. Alloys can be protected from corrosion by cladding the exposed surface with a thin layer of aluminium.

clamshell door /ˈklæmʃəl dɔːr/ noun the hinged part of a thrust reverser. Clamshell doors are hydraulically or pneumatically opened, and direct the exhaust gases forwards to produce reverse thrust.

classification /ˈklɑːsɪfəˈkeɪʃən/ noun the act of putting things into groups or classes because they possess particular common features. Classification of aircraft consists of a multi-level diagram with each category divided into sub-categories.

A full
classification of layer cloud is given in the table.

classify /klæsɪfɪt/ verb to group items so that those with similar characteristics are in the same group ○ Precipitation is classified as light, moderate or heavy according to its rate of fall. ○ The weather associated with visibility reductions by particles suspended in the atmosphere is classified either as fog, mist, haze, or smoke.

clear /klɪər/ adjective 1. referring to conditions in which it is easy to see, e.g. with no cloud or fog ○ a clear sky a sky with no cloud ○ a clear winter night a night with no fog, mist or other conditions which might impair visibility 2. possible to easily see through 3. with nothing blocking the way ○ clear runway, the runway is clear nothing is on the runway ○ keep the exits clear do not put anything and do not stand in front of the exits 4. away from 5. easy to hear ○ clear of cloud either above or below cloud ○ keep clear (of) keep away (from) 6. easy to understand ○ The explanation is very clear 7. understood ○ is it clear? do you understand? 8. verb 1. to remove a blockage or some other unwanted effect which prevents a system from working correctly ○ A heater element is fitted to clear the detector of ice. 2. to disappear ○ In winter frost and fog are slow to clear 3. to make sure that it is all right to do something ○ clear it with the CFI make sure that the CFI agrees with the request 4. to officially ask people to quickly leave a given area or place ○ to clear the building to quickly leave the building ‘…the principles of weight and balance should have been learned by all pilots during their initial training, but it is clear that, afterwards, some forget’ [Civil Aviation Authority, General Aviation Safety Sense Leaflet]

COMMENT: On 27th March 1977 two Boeing 747’s collided on the runway at Los Rodeos airport Tenerife in poor visibility, resulting in 575 deaths. A KLM 747 commenced take-off while a Pan Am 747 was still taxing towards it on the same runway. There was clearly a breakdown in communications, perhaps a misunderstood radio call. The Pan Am aircraft had been asked by the controller, who was unable to see either aircraft due to low cloud, ‘Are you clear of the runway?’ The KLM aircraft had already commenced the take-off roll without clearance. It is possible that the KLM pilot mistook the call to the other aircraft thinking that he was ‘clear to take off’.

clear air turbulence /klɪər ˈtʌ:bjʊləns/ noun turbulence encountered in air where no cloud is present (NOTE: CAT is often associated with the jet stream.)

clearance /ˈklɛərəns/ noun 1. a space made to allow for the movement of hardware relative to other hardware ○ clearance between rocker arm and valve tip 2. official permission ○ Obtain clearance for IFR flight. 3. the disappearance of something unwanted, often rain, fog or snow ○ Low temperatures caused a delay in the clearance of fog.

clearance limit /ˈklɛərəns ˈlɪmɪt/ the point to which an aircraft is allowed to proceed when granted an air traffic control clearance.

clear ice /klɪər ˈaɪs/ noun ice which is glass-like rather than white

clear pass /klɪər ˈpaːs/ noun an exam result which is in no doubt

clear to land /klɪər tə ˈlaːnd/ noun air traffic control permission to land

climatise /ˈklaɪmətaɪz/ verb to proceed when granted an air traffic control clearance

climatic zone /ˈklɪmətɪk ˈzoʊn/ noun one of the eight areas of the Earth which have distinct climates

COMMENT: The climatic zones are: the two polar regions (Arctic and Antarctic); the boreal zone in the northern hemisphere, south of the Arctic; two temperate zones, one in
climatology

the northern hemisphere and one in
the southern hemisphere; two
subtropical zones, including the
deserts; and the equatorial zone which
has a damp tropical climate.

climatology /klaɪməˈtɒlɒdʒi/ noun
the science of the study of climate ○
Although pilots do not need to be
experts in climatology, they should have
a good understanding of the factors
which produce changes in the weather.

climb /klɒm/ noun the act of increas-
ing altitude by use of power ○ Fine pitch
enables full engine speed to be used
during take-off and climb. Opposite
descent ▪ verb to increase altitude by
use of power ○ After take-off, the air-
craft climbed to 5,000 ft. Opposite
descend

climb-out /ˈklɒməut/ noun a flight
after take-off from 35 feet to 1,500 feet
during which undercarriage and flaps
are retracted ○ Turn right after climb-
out.

clockwise /ˈklɒkwaɪz/ adjective, adverb
describing a circular movement
in the same direction as the hands of a
clock ○ a clockwise direction ○ The rel-
ative bearing indicated is measured
clockwise from the nose of the aircraft.
Opposite anticlockwise

clog /klɒg/ verb to prevent movement
of fluid through a pipe, etc., because of
a build-up of solid matter ○ Most filters
allow unfiltered fluid to pass to the sys-
tem when the filter becomes clogged.

close /kləʊz/ verb to shut ○ Close the
door.

closure /ˈkləʊzər/ noun the act of clos-
ing or shutting ○ The voltage regulator
is turned on by the closure of the gener-
ator control relay.

cloud /klaʊd/ noun a mass of water
vapour or ice particles in the sky that
can produce rain

COMMENT: The most important types
of cloud are the following:

- altocumulus, cloud formed at about
  12,000 feet as a layer of rounded
  mass with a level base;
- altostratus,
  cloud formed as a continuous layer
  between 6,000 and 20,000 feet usually
  allowing the sun or moon to be seen
  from the surface; cirrocumulus, a
  layer of broken cloud at about 20,000
  feet; cirrostratus, layer cloud at about
  20,000 feet; cirrus, cloud made of ice
crystals at 25,000 – 40,000 feet
appearing as hair-like formations;

- cumulonimbus, cloud formed as a
towering mass and often associated
with thunderstorms; cumulus, cloud
formed in rounded masses with a flat
base at low altitude, resulting from up
currents of air; nimbostratus, thick
dark layer cloud at low altitude from
which rain or snow often falls (nimbus
= rain cloud); stratocirrus, cloud
similar to cirrostratus but more
compact; stratocumulus, a layer of
connected small clouds at low altitude.

cloud base /ˈklaʊd beɪs/ noun the
bottom part of a layer of cloud ○ In gen-
eral, the lower the cloud base, the less
heat is lost by the earth.

cloud ceiling /ˈklaʊd ,siːlɪŋ/ noun
the height above the ground or water of
the base of the lowest layer of cloud

cloud group /ˈklaʊd grʊp/ noun a
collection of different cloud types
which have similarities, e.g. stratus clouds

cm abbreviation centimetre

c-o- /ˈkəʊ/ prefix together ○ co-axial
having the same axis ○ co-located
having the same location.

coalesce /ˈkoʊələs/ verb to join
together to form a large mass or number ○
The moisture in the air coalesces into
large water droplets.

coalescence /ˈkoʊələsəns/ noun
the act of joining together to form a
larger mass or number ○ Coalescence of
water vapour in the atmosphere forms
larger droplets of water.

coast /ˈkəʊست/ noun an area where
the land meets the sea ○ Valentia is situated
on the coast of south west Ireland.

coastal /ˈkəʊst(ə)l/ adjective refer-
ing to the coast ○ coastal area an area near a coast ○ Land and sea breezes occur in coastal areas.

coastal refraction /ˌkəʊst(ə)l ri ˈfrekʃən/ noun change in direction of
waves when a signal crosses a coastline
from sea to land

coastline /ˈkəʊstlɛn/ noun the out-
line of a coast seen from a distance or
47 collapse

coefficient /ˈkəʊʃənt/ noun a mathematical quantity placed before and multiplying another
C of G abbreviation centre of airworthiness

C of A abbreviation certificate of airworthiness

coat /kəʊt/ noun a thin covering of a substance such as paint a The coats of paint on a large aircraft significantly increase its weight.
coat verb to cover with a thin layer of a substance such as paint
Metals are coated for protection against corrosion.
coating /ˈkəʊtɪŋ/ noun 1. a thin layer of a substance There are two coatings on the inside of CRT screens. 2. the act of covering with a thin layer of a substance
cock /kɒk/ noun a manually controlled valve or tap to control the flow of a liquid. It is necessary to have a master cock for each engine.
cockpit /ˈkɒkpiːt/ noun the forward area in an aircraft from where the aircraft is controlled by the pilot. In the case of an in-flight oil loss, a warning indicator will light in the cockpit.

‘…in the cockpit of the future there will be two animals, a pilot and a dog. The pilot will be there to feed the dog, and the dog will be there to bite the pilot if he tries to touch anything’ [NYT News Service]

code /kəʊd/ noun 1. a system of numbers, letters or symbols used to represent language which has to be learned and decoded in order for the receiver to understand the meaning 2. a series of pulses by which an aircraft transponder replies to a signal from the ground

codeshare /ˈkəʊdʃeər/ noun a codeshare deal an agreement between airlines regarding connecting flights The two airlines have entered into a codeshare deal for flights between Dubai and Bangkok.
codeshare partner /ˈkəʊdʃeər ˌpɑːtnə/ noun an airline which has an agreement with another airline regarding connecting flights

codesharing /ˈkəʊdʃeərɪŋ/ noun 1. a procedure which allows travellers to use connecting flights between one airline and another partner airline for worldwide destinations 2. an arrangement by which two airlines sell seats on the same flight using their own flight numbers

...as the aeroplane slid off the runway, the left landing gear collapsed’ [Pilot]
collect /kəˈlekt/ verb 1. to gather over a period of time. ○ Any given object will usually collect ice more quickly at high speed. 2. to take something or to pick something up from a place.
collection /kəˈleʃən/ noun 1. a number of things brought together ○ a collection of vintage aircraft 2. an act of being collected by somebody ○ The documents are in the office awaiting collection.
collide /kəˈlaɪd/ verb to bump or to crash into something ○ The aircraft left the runway and collided with a fire truck.
collision /kəlˈzɪʒən/ noun a crash between two objects, two vehicles, etc. ○ If there is a risk of collision, alter course to the right. ○ collision avoidance the prevention of collisions by taking measures beforehand to ensure that they do not happen.
column /ˈkɒlmən/ noun 1. a body of fluid or solid with a tall, narrow shape ○ Torricelli first demonstrated that the atmosphere has weight by showing that it can support a column of liquid. 2. a vertical section of a table in a document ○ Column four of the table shows the totals of the other three columns.
combat /ˈkɒmbət/ verb to fight against ○ Fire extinguishers are provided to combat fire.
combat aircraft /ˈkɒmbət ˈeɪskrɪft/ noun aircraft designed for warfare.
combination /ˌkɒmbəˈneɪʃən/ noun two or more things brought together to form one ○ The combination of wind direction and wind speed is called velocity.
combine /ˈkʌmˈbain/ verb to bring two or more things together to make one ○ The stabilising channels for allons and elevators are combined. ○ Thrust and lift combine to overcome drag and gravity.
combustible /ˈkʌmbəstəbl/ adjective burning or igniting easily ○ combustible materials materials which will catch fire easily, e.g. wood, paper, etc.
combustion /kəmˈbʌʃən/ noun burning, especially that which takes place in an engine ○ The heat generated by combustion is considerable.
combustion chamber /kəmˈbʌʃən ˈtʃæmə/ noun the part of the cylinder in a piston engine where the ignition of the fuel/air mixture takes place.
combustor /kəmˈbʌstər/ noun the part of a jet or gas-turbine engine that burns fuel to produce power. It consists of the fuel injection system, the igniter, and the combustion chamber.
command /ˈkɑːmən/ noun an order ○ the command to evacuate the order to leave the aircraft in an emergency ○ in command having responsibility for and authority over ○ verb to order something to be done ○ The captain commanded the evacuation of the aircraft.
commander /ˈkɑːmənda/ noun a pilot in control of, and responsible for, the aircraft and its contents during flight ○ the commander of an aircraft the member of the flight crew specified by the operator as being the commander.
commence /ˈkɑːməns/ verb to start to do something ○ commence the evacuation start getting people out of the aircraft.
commercial /ˈkɑːmərəl/ adjective referring to a business activity ○ commercial aviation flying as a business enterprise.
commercial aircraft /ˈkɑːmərəl ˈeɪskrɪft/ noun aircraft used to carry cargo or passengers for payment.
Commercial Pilot’s Licence /ˈkɑːmərəl ˈpaɪlət ˈlaɪsns/ noun the licence that a person requires to be pilot-in-command of public transport aircraft certified for single-pilot operations. Abbreviation CPL.
common sense /ˈkɒmən ˈsens/ noun ordinary good sense ○ You should use your common sense as well as follow the rules if a passenger feels unwell.
comms /ˈkɒmz/ abbreviation communications.
communicate /ˈkəˌmjuːnikət/ verb to make contact with somebody in order to pass information.

communication /ˈkəˌmjuːniˈkeɪn/ noun the act of passing information to somebody usually, but not always, by using language.

Two methods of communication are available to crew members – language and hand signals.

communication link /ˈkəˌmjuːniˈkeɪnˌlɪŋk/ noun a telephone or radio connection, as between the ground crew and flight deck while an aircraft is preparing for departure.

communications /ˈkəˌmjuːniˈkeɪnəlz/ plural noun a system of passing information.

VHF communications are allocated the frequency bracket 118–137 MHz.

Abbreviation communications

commutator /ˈkəˌmjuːtətər/ noun a device containing metal bars connected to the coils of a generator to produce electrical current.

As the power output required is DC not AC, a commutator is fixed at one end of the armature.

compact /ˈkɒmpəkt/ adjective small, close together, or not taking much space.

The annular system, as used on modern aircraft, provides a compact system, and, for the same output and mass flow, a shorter system.

Verb 1. to make smaller or more dense by pressing 2. to compress, by driving over with heavy machinery.

When the aircraft passes through a snowstorm causes compaction of snowflakes into a solid mass on leading edges and air-intakes.

compaction /ˈkɒmpəkʃən/ noun the act of pressing things together to make it hard.

The speed of impact when the aircraft passes through a snowstorm causes compaction of snowflakes into a solid mass on leading edges and air-intakes.

comparable /ˈkɒmpərəbl/ adjective possible to compare equally with something else.

Titanium is non-magnetic and has an electrical resistance comparable to that of stainless steel.

comparator /ˈkəˌpærətər/ noun a device to compare two things.

The autopilot comparator monitors the operation of the elevator and aileron channels.

compare /ˈkəˌpeɪr/ verb to find the similarities and dissimilarities between two or more things.

When the chart is properly orientated, it is easier to compare the distance between landmarks on the ground with their corresponding distances on the chart.

An aneroid barometer is small compared with a mercury barometer. (Note: Compare with is regarded by some as better usage than compare to.)

comparison /ˈkəˌpærəns/ noun a statement expressing the differences and similarities between two or more things.

A table showing a comparison of fixed points on various temperature scales is given on page three.

compartment /ˈkəˌpɑːrtnent/ noun a small space or area in a structure for a particular purpose.

Engine compartment the area reserved for crew.

compass /ˈkæmpəs/ noun an instrument usually with a magnetic needle which always points to the magnetic north.

compass bearing /ˈkæmpəsˌbɛrɪŋ/ noun a direction or position relative to a fixed point measured in degrees on a compass.

compatibility /ˈkæmpətɪəlɪtɪ/ noun the ability of a component to operate successfully with other components.

Problems of compatibility caused the computerised system to malfunction.

compatible /ˈkəˌpærəbl/ adjective referring to a component or system which can be used with a different component or system without causing any problems.

Computer software designed for one particular system may not be compatible with other systems.

compensate /ˈkəmpənˌsæt/ verb 1. to make up for the loss of something.

The floor covering may be designed to compensate for temperature.
compensation noun money paid to an individual or organisation to replace or make up for physical or financial loss. The company paid out $2 million in compensation to the families of those who lost their lives in the tragedy.

compensation /ˌkʌmpəˈseɪʃən/ noun money paid to a person or organisation to make up for a physical or financial loss. The money offered by the company did not compensate for the injuries she received in the accident.

compensation /ˌkʌmpəˈseɪʃən/ noun money paid to an individual or organisation to replace or make up for physical or financial loss. The company paid out $2 million in compensation to the families of those who lost their lives in the tragedy.

compilation /ˌkɒmplɪˈleɪʃən/ noun the putting together of suitable information. The manual is a compilation of materials used by each of the instructors.

compile /ˈkʌmplaɪ/ verb to put together a number of pieces of information. Aviation routine weather reports are compiled half-hourly or hourly at fixed times.

complement /ˈkɒmpləmənt/ verb to fit in with and improve the performance of something. Ultra-sonic detection is used to complement other methods of flaw detection.

complementary /ˌkɒmpləˈmɛntəri/ adjective the fact of fitting in with and improving the performance of something. SSR is complementary to the primary radars used by ATC.

complete /ˈkɒmplɪt/ adjective 1. containing all the parts it should contain. The centre section can be constructed either as a complete unit or as two separate units. 2. absolute and total. ■ verb 1. to finish or make whole. The number of revolutions for the crank-shaft to complete a full cycle is always two. ■ complete the work to continue until the work is finished. 2. to fill in information. ■ complete the flight plan to fill in the required information in the flight plan.

completion /ˌkɒmplɪˈkeɪʃən/ noun the satisfactory finishing of a task. It is important to carry out an inspection of an aircraft after completion of de-icing operations.

complex /ˈkɒmplɛks/ adjective complicated and therefore possibly difficult to understand. Of all the pre-departure activities, route planning is one of the most complex.

complexity /ˌkɒmplɛksɪtɪ/ noun the condition of being complex, or a complication. Up-to-date design does not necessarily mean structural complexity.

comprehensive /ˌkɒmpriˈliːʃən/ adjective not easy to understand

complication /ˌkɒmplɪˈkeɪʃən/ noun a difficulty or problem. The complication with the Mercator’s projection is that great circle directions must be converted to rhumb line directions by the application of conversion angle before they can be plotted.

complicate /ˈkɒmplɪkeɪt/ verb to be or do what is required by an instruction or law. Equipment and furnishings of modern jet transports must comply with safety regulations. Passengers must comply with the no-smoking signs. (NOTE: complying – complied)

component /ˈkɒmpənənt/ noun 1. a part of an aircraft, aircraft system or piece of equipment. The undercarriage is made up of a number of different components. 2. one part of a force such as wind which consists of a number of different parts. 3. a substance which forms part of a compound

compose /ˈkɒmpəz/ verb to make something from a number of parts. The atmosphere is composed of a mixture of gases.

composite /ˈkɒmpəzɪt/ adjective referring to something made up of a number of different parts.
material © The flight crew route flight plan is a composite document which serves as a navigation log. ■ noun a lightweight but very strong man-made material used in aircraft manufacturing © To make a composite it is necessary to combine the reinforcing glass fibres with special glue or resin. (NOTE: The word composite was originally an adjective, but through frequent usage the term composite material has been shortened to composite.)‘

Canadian Aerospace Group (CAG) is working with Pratt & Whitney Canada on a turboprop-powered version of its Windeagle all-composite light aircraft’ [Flight International 16–22 July 1997] COMMENT: Composites are used in the construction of many modern aircraft, from gliders to aircraft such as the Airbus A320, because they are strong and lighter than metals.

composition /ˈkɒmpəzɪʃən/ noun the make-up or structure of something © composition of the atmosphere the combination of gases which make up the atmosphere compound /ˈkɒmpoʊnd/ adjective referring to something made up of two or more parts or substances ■ noun a substance made up of two or more components © A chemical compound has qualities that are different from those of the substances from which it is made. © Advances in scaling compounds have now made fuel tanks less liable to leaks. compound wound generator /ˈkɒmpoʊnd wʊnd ˈdʒɛnərətər/ noun a generator which consists of a number of windings compress /ˈkəmpres/ verb to put under pressure thereby reducing volume © Pressure is created when a fluid is compressed. compressibility /ˈkəmpresəbɪləti/ noun the natural ability of a substance to change volume when under varying pressures © In systems using very high pressure, the compressibility of the liquid becomes important. compressible /ˈkəmpresəbəl/ adjective referring to something that can be compressed © Air is compressible, but water is not.

51 concentration compression /ˈkəmprɛʃən/ noun an act or instance of putting pressure on something compression stroke /ˈkəmprɛʃən strɔʊk/ noun the stage of an internal combustion cycle when the fuel/air mixture comes under pressure from the upward-moving piston compressive /ˈkəmpresɪv/ adjective referring to forces caused by pressure on a surface © A strut is designed to withstand compressive loads. compressive load /ˈkəmpresɪv ləʊd/ noun a load caused by forces acting in opposite directions towards each other compressive stress /ˈkəmpresɪv ˈstres/ noun the resistance of a body to crushing by two forces acting towards each other along the same straight line compressor /ˈkəmpresər/ noun a device such as a pump to compress air, in order to increase pressure © A shaft connects the turbine to the compressor. © axial comprise /ˈkəmprɪz/ verb to be made of (NOTE: The correct use of comprise is often disputed. Some people regard it as a synonym for the verb consist of, while others believe it should be used in an opposite sense: a tank, pipes, a filter, a pump and a carburettor comprise the fuel system. It is sometimes used in its passive form: the fuel system is comprised of a number of different parts.) concentrate /ˈkənsentrɪt/ verb 1. to collect in a particular place rather than spread around © Most of the mass of air is concentrated at the lowest levels of the atmosphere. 2. to give attention and thought to something in particular © This chapter concentrates on charts. © to concentrate hard to give all one’s thought and attention to something concentration /ˈkənsentrəʃən/ noun 1. the fact of being collected in a particular place rather than spread around © The maximum concentration of ozone is between 20 and 25 km above the Earth’s surface. 2. the act of giving attention and thought to something © In
concentric /ˈkənˈsentrɪk/ adjective having the same centre a concentric circles circles of different diameters but with the same centre point

concept /ˈkɒnsɛpt/ noun an idea or abstract principle ○ The concept of open skies is not one with which everybody agrees. ○ a complicated concept an idea or series of ideas or principles which are difficult to understand

concern /ˈkənˈsɜːn/ noun 1. serious interest ○ a matter for concern something which must be taken very seriously 2. responsibility ○ Attention to the welfare of passengers is the concern of the cabin crew. ○ Safety is everybody’s concern. ○ this is no concern of ours this is nothing to do with us ○ verb 1. to cause somebody to feel worried ○ this report concerns me enormously I am not at all happy about this report 2. to be about or to be the subject of ○ If there is serious vibration, the crew should shut down the engine concerned. ○ this report concerns me this report is about me 3. to be of interest and relevance to ○ the regulations concern all employees the regulations apply to all employees

concrete /ˈkɒnkrɪt/ noun a substance made of cement, sand and water used in the construction of buildings, roads, etc. ○ Rock, sand and concrete reflect only 10–20% of radiation.

condensation /ˈkɒndənˈseɪʃən/ noun the process by which vapour changes into liquid ○ If the air becomes saturated, further cooling results in condensation. Opposite evaporation

condensation trail /ˈkɒndənˈseɪʃən treɪl/ noun same as vapour trail

condense /ˈkənˈdɛns/ verb 1. to change from vapour to liquid form ○ The most common type of hygrometer is one in which a surface in contact with the atmosphere is cooled until moisture begins to condense on the surface. Opposite evaporate 2. to remove unnecessary parts from a text to make it shorter ○ The synoptic code condenses information without loss of sense.

condenser /ˈkɒndənsər/ noun an electrical capacitor ○ The condenser prevents spark plugs from arcing.

condition /ˈkənˈdɪʃən/ noun 1. the present state of something ○ although the aircraft is old, it is in good condition the aircraft is old but well cared for 2. the state of the surrounding atmosphere ○ In a high relative humidity condition, the evaporation rate is low. ○ abnormal weather conditions unusual or unfavourable weather ○ adverse weather conditions bad weather 3. circumstances 4. something on which another thing depends ○ on condition that only if ○ the flight will depart on condition that the weather improves the flight will depart only if the weather improves

conducive /ˈkənˈdjʊsɪv/ adjective favourable, which allows something to happen more easily ○ Atmospheric conditions conducive to the formation of ice are detected and these operate a warning system.

conduct /ˈkənˈdʌkt/ noun /ˈkɒnkwɪkt/ 1. a manner or way of doing something ○ The captain is responsible for the safe conduct of the flight. ○ The investigation found that the flight attendant’s conduct was unacceptable. ○ verb 1. to organise and do something; to carry out ○ The crew will conduct area checks. ○ Security conducted a search of the building. 2. to allow something such as electricity, heat etc. to pass through ○ Water conducts electricity.

conduction /ˈkənˈdʌkʃən/ noun the process by which heat or electricity passes through a substance ○ Heat is transferred to the layer of air next to the Earth’s surface by conduction.
movement of the 3rd January not mention anything other than the January confines itself to the incident of 3rd January transferred from the Earth’s surface the poor conductivity of air, heat is transferred from the Earth’s surface upwards by convection.

conductor /kənˈdaːktər/ noun a substance through which heat or electricity can pass ○ Water and steel are good conductors.

cone /kən/ noun a solid body with a base in the shape of a circle, and with sides which narrow to a point, or any object which has that shape

configuration /kən,figjəˈreɪʃ(ə)n/ noun the pattern or way in which things are arranged ○ configuration of an aircraft’s fuel tank system the way in which the tanks are laid out

confine /kənˈfain/ verb 1. to limit to a particular area ○ Cooling is confined to the air in contact with the ground. ○ The damage was confined to a small area. 2. to limit to a given subject ○ the report confines itself to the incident of 3rd January the report deliberately does not mention anything other than the incident of the 3rd January confined /kənˈfaind/ adjective limited, small ○ a confined space a small defined space which does not allow free movement

confirm /kənˈfərm/ verb to agree that something is correct, or to repeat it to remove any uncertainty ○ The attitude indicator shows that the aircraft is in a nose down attitude and the increasing airspeed confirms that the aircraft is not in level flight. ○ Can you confirm that the instructor was flying the aircraft at the time of the collision? ○ VHF and/or UHF radio aids confirm ADF bearings.

COMMENT: Cross-checking of certain flight instruments is used to confirm readings from other instruments, e.g. the airspeed indicator and vertical speed indicator confirm pitch information from the attitude indicator.

conform /kənˈfərəm/ verb to correspond to required standards ○ Fuels must conform to strict requirements. ○ to conform to regulations to do what is required by rules and regulations

conformal /kənˈfərm(ə)l/ adjective representing angles, bearings, etc., correctly ○ Lambert’s conformal projection

congestion /kənˈdʒestʃən/ noun a situation where there are too many people or vehicles in a confined space for them to be able to move freely ○ When leaving the aircraft in an emergency, to avoid congestion, passengers should be directed to move away from exits quickly.

conic /kənɪk/ adjective based on the shape of a cone ○ conic projection the standard two-dimensional representation of the earth

conical /kənɪkl/ adjective shaped like a cone ○ The nose of Concorde has a conical shape.

conjunction /kənˈdʒʌŋkʃən/ noun ○ in conjunction with working or operating together with ○ Built-up areas, used in conjunction with other features such as rivers, railways and coastlines which are near them, are more easily identified.

connect /kəˈnekt/ verb to join ○ Batteries are sometimes connected in series. ○ A cockpit lever is connected to a needle valve in the float chamber.

connecting flight /kəˈnektɪŋ ˈflaɪt/ noun a second aircraft which a passenger should arrive on time to catch, and which will take him or her to the final destination ○ Instead of flying direct to London, take the flight to Amsterdam and then take a connecting flight to London Heathrow.

connecting rod /kəˈnektɪŋ rəd/ noun an engine part that connects the piston to the crankshaft

connection /kəˈnektʃən/ noun 1. the point at which things are joined ○ There is an electrical connection to the battery. 2. a link or feature that makes things interdependent ○ There is a connection between temperature change and altitude. 3. the process of catching
a second aircraft to arrive at a final destination. 1. Follow the ‘Flight Connection’ signs.

**connector** /ˈkɒnˈnektə/ noun a device which connects two or more things. 2. A connector is used to connect two lengths of wire together. 3. Standard connectors consist of a metal coupling with a rubber sandwich joint.

**consecutive** /ˈkɒnˈseksɪətɪv/ adjective following one another without a break. 1. a period of 28 consecutive days: 28 days following immediately one after the other.

**consequence** /ˈkɒnsɪkwəns/ noun the result of an action. 1. The accident was a consequence of the pilot’s actions. 2. as a consequence as a result

**consequent** /ˈkɒnsɪkwənt/ adjective resulting. 1. As temperature rises, there will be a consequent increase in the volume of the gas.

**consequently** /ˈkɒnsɪkwəntli/ adverb therefore, as a result. 1. She was late, consequently she missed the start of the examination.

**conserve** /ˈkɒnsɜrv/ verb to avoid using unnecessarily. 1. Release the brakes when necessary and conserve main system pressure. 2. to conserve energy to use only as much energy as you really need. 3. to conserve fuel to use as little fuel as possible

**consider** /ˈkɒnsɪdər/ verb to think carefully about something. 1. If the aircraft is low on fuel, the commander should consider diverting to the nearest suitable airport.

‘. . . many purchasers of flight simulators would argue that, when considering the major manufacturers, there is little to choose between them’ [Civil Aviation Training]

**considerable** /ˈkɒnsɪdərəbl/ adjective a lot of, quite large. 1. The required range of trim change is considerable. (Note: Considerable does not mean that something should be thought about, as the meaning for the verb consider might suggest.) 2. a considerable amount of fuel a lot of fuel.

**distance** a long distance 3. considerable force a lot of force

**consideration** /ˈkɒnsɪstərəʃən/ noun 1. something important to remember and to think carefully about. 2. to take into consideration to remember to include when thinking about something, solving a problem or making a calculation. 3. thoughtfulness, respect to show consideration for other people and property to show respect for what belongs to other people

**consist** /ˈkɒnsɪst/ verb to consist of to be made up of. 1. Layer cloud names consist of a prefix, according to height of base, and a suffix according to shape. 2. to consist in to mean, to be

**consistent** /ˈkɒnsɪstənt/ adjective always reacting or behaving in the same way. 1. Human hair responds in a consistent manner to changes in the relative humidity. 2. consistent performance performance which maintains a particular standard

**consolidate** /ˈkɒnsəldət/ verb to make more solid or strong. 1. a revision of the subject helps to consolidate it. 2. revision of the subject helps to set it more firmly in the memory

**consolidation** /ˈkɒnsəldəʃən/ noun 1. a process by which something is made more solid or strong. 2. the grouping of goods together for shipment

**constant** /ˈkɒnstənt/ adjective unchanging. 1. the temperature of the gas remains constant. 2. the temperature of the gas stays the same. 3. constant pressure pressure which stays the same

**constant speed drive unit** /ˈkɒnstənt spɪdˈdrɪv ˈdruːnt/ noun a device fitted to aircraft with constant speed propellers. Abbreviation CSDU

**constant speed propeller** /ˈkɒnstənt spɪd prəˈpelə/ noun a propeller with a control system which automatically adjusts pitch to maintain selected rpm

**constant speed unit** /ˈkɒnstənt ˈspɪd ˈdruːnt/ noun a device that automatically keeps a propeller at a speed set by the pilot. Abbreviation CSU
CONSTITUENT /ˈkɒnʃtjuːnt/ noun any one of the various parts that make up a whole. 

CONSTRUCT /ˈkɒnstrʌkt/ verb to make up, to form. 

CONSTRUCTIVE /ˌkɒnstrəktɪv/ adjective constructive. 

CONTRAST /ˈkɒntræst/ noun a means of putting two things together, or the way in which something is put together. 

CONSTRUCTION /ˈkɒnstrʌkʃən/ noun construction. 

CONSUME /ˈkɒnʃm/ verb to use up in a given time. 

CONSULT /kənˈsʌlt/ verb to ask someone for advice or information. 

CONTACT /ˈkɒntækt/ noun 1. touch in contact with, touching. 

CONTACT BREAKER /ˈkɒntækt breɪkər/ noun a mechanically operated switch which is timed to break the primary circuit when maximum current is flowing. 

CONTACT FLIGHT /ˈkɒntækt flai/ noun a method of navigation for aircraft in which the pilot or crew use no navigational aids, but find their way by observing visible features of the ground. 

CONTACT NUMBER /ˈkɒntækt nʌmbər/ noun a telephone number where information can be obtained. 

CONTAIN /ˈkɒnten/ verb to hold, to have inside. 

CONTAINER /ˈkɒntenər/ noun a box, bottle, etc., which holds something. 

CONTAMINATE /kənˈteɪmɪnet/ verb to make something impure, harmful or dangerous. 

Engine, which in turn consume fuel. 

Consumption /ˈkənˈsʌmplʃən/ noun. 

The number of landings per 24-hour period is subject to constraint. 

Wings are constructed of light alloy pressed ribs and an outer skin. 

A smouldering fire in a waste container could become very active due to pressure changes during ascent. 

If contaminated air enters.
contaminated fuel /kənˈtæmt/ noun fuel which contains an unwanted substance, such as water, and is therefore dangerous to use.

contamination /ˈkæntəmən/ noun a process by which a liquid, gas or object is made unusable because impurities or foreign matter are allowed into or onto it.}

nuclear contamination damage done to an object, person or substance because of contact with nuclear radiation.

content /ˈkɒntent/ noun the amount of a substance that is contained within something, often expressed as a percentage. 1. The stratosphere is a layer in which the water vapour content is low. 2. the moisture content of the atmosphere the amount of water vapour in the air. 3. continent /ˈkɒntənt/ noun one of the seven great land masses of the Earth.

COMMENT: The seven continents are: Asia, Africa, North America, South America, Australia, Europe and Antarctica.

continental /ˈkɒntən(t)l/ adjective referring to a continent.

continental climate /,kɒntən(t)l/ noun the type of climate found in areas where there is no effect from the sea.

contingency /ˈkɒntɪndʒənsi/ noun something which might happen in the future and therefore must be planned for.

contingency reserve fuel /kənˈtɪndʒənsi ˈrɪznəl/ noun fuel which would only be used in an unusual situation such as a diversion.

continuity /ˈkɒntɪnjuəti/ noun continuing.

continuity of precipitation continuing rain, snow or hail.

contour /ˈkɒntʊr/ noun the shape of something.

contour chart /ˈkɒntʊr ˈtʃɑrt/ noun chart which shows areas of high and low ground.

contour gradient /ˈkɒntʊr ˈɡreɪdiənt/ noun steepness of change in elevation.

contour line /ˈkɒntʊr ˈlaɪn/ noun a line on a map or chart joining points of equal elevation.

contract /ˈkɒntrækt/ verb to become smaller in volume. 1. Liquids will expand or contract as a result of temperature changes. Opposite expand.

contraction /ˈkɒntrækʃən/ noun the decrease in volume of a substance brought about by cooling. 1. Due to contraction, the length of a mercury column shortens. Opposite expansion.

contrail /ˈkɒntrəl/ noun same as vapour trail.

contrast /ˈkɒntrɑst/ noun 1. the amount of light and dark in something seen. 2. Contrast and colour enable a pilot to identify ground features.

The difference between two things. 1. There is an enormous contrast between the performance of the two aircraft. 2. in contrast to when compared with. 3. Air at altitude is cold in contrast to air at the surface.

contribute /ˈkɒntriˈbju:t/ verb to give or provide as part of the whole. 1. Exhaust gases contribute to engine power. 2. Although the weather was bad, pilot error contributed to the accident. Pilot error was partly responsible for the accident.

contribution /ˈkɒntriˈbjuʃən/ noun 1. the part that something plays in making or causing something. 2. The differences in the effect of solar radiation on land and sea make the biggest contribution to weather and climate. 3. The act of contributing or something. 4. There are other factors which cause the division of the lower atmosphere into two layers but the ozone effect is a major contributor.
control /ˈkɒntrəʊl/ noun 1. the authority or ability to direct somebody or something 2. a crowd control the management of the movements of large numbers of people 3. checking or examining □ verb to direct, to manage or to make a machine, system, procedure, etc., work in the correct way □ The purpose of the centrifugal switch is to control the starting and ignition circuits. (NOTE: The word control in English is used in a different way to similar words in other languages. In English, the verb check is more often used to mean ‘look at and verify’ while control is used in the sense of ‘to make something work in a particular way’: the yoke and rudder pedals are used to control the movement of the aircraft. Note also: controlling – controlled)

control area /ˈkɒntrəʊl ərɛə/ noun the airspace above a particular area on the ground, which is controlled by a particular authority. Abbreviation CTA

control column /ˈkɒntrəʊl kələm/ noun the main hand control used by the pilot to control the aircraft in roll and pitch

controlled airspace /ˈkɒntrəʊld kəʊsəps/ noun airspace which is governed by rules and regulations which pilots must comply with. Abbreviation CAS

controller /ˈkɒntrəʊlə/ noun 1. a device which ensures that something operates in the correct way □ the propeller speed controller 2. a person who manages systems to ensure the smooth operation of procedures

controls /ˈkɒntrəʊlz/ plural noun manual or automatic devices that are used to control a machine, a system, etc., or to make a machine, a system, etc., work in a correct way □ the pilot at the controls of the aircraft the pilot who is operating the flying controls

control surfaces /ˈkɒntrəʊl ˈsɜːfɪsəz/ plural noun moveable aerofoils, usually on the wings and tailplane, which can be operated from the cockpit by the pilot, thus changing aircraft attitude

control tower /ˈkɒntrəʊl tɔːr/ noun a tall building on an airfield from which air-traffic controllers organise incoming and outgoing aircraft by speaking to their pilots by radio

control zone /ˈkɒntrəʊl zɔːn/ noun a designated ATC area. Abbreviation CTR

covation /ˈkəʊvəʃən/ noun the process by which hot air rises and cool air descends □ Heat is transferred from the Earth’s surface upwards largely by convection.

convective /ˈkəʊvɛktɪv/ adjective referring to convection, or something which is affected by the vertical circulation of air □ convective movement movement caused by warm air rising and cool air descending

convective clouds /ˈkəʊvɛktɪv klaʊdz/ plural noun clouds formed as a result of warm moist air rising and condensing at altitude

convenience /ˈkəʊnvɪniəns/ noun 1. personal comfort and benefit □ Reading lights are provided for passengers’ convenience. □ at your convenience when it is least troublesome for you 2. ease of understanding □ For convenience we will assume that the Earth is round. 3. usefulness, or easiness to use

convenient /ˈkəʊnvɪniənt/ adjective 1. useful □ The circular slide rule has a convenient scale for converting weights and volumes. 2. suitable and unlikely to cause problems □ We must arrange a convenient time and place for the meeting.

covation /ˈkəʊvəʃən/ noun a plan by which large numbers of people and long discussions in order to arrive at an agreed course of action often outlined in a public statement □ the Tokyo Convention

conventional /ˈkəʊvənʃənəl/ adjective usual or familiar to most people □ Every pilot must know the conventional symbols used for depicting the various ground features on charts.

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converge /kənˈvɜːdʒ/ verb to come together at a particular point. □ Meridians converge towards the poles. □ Aircraft on converging courses aircraft on courses which may eventually be too close to each other if no corrective action is taken. Opposite *diverge*

convergence /kənˈvɜːdʒəns/ noun the fact of coming together at a particular point. □ The inter-tropical convergence zone is the zone in which the trade winds from the two hemispheres approach each other. □ There is convergence of meridians of longitude at the north and south poles. Opposite *divergence*

converse /kənˈvɜːs/ noun the opposite. □ The converse of port is starboard.
□ Warm air rises — the converse is also true in other words, cool air descends.

conversion /kənˈvɜːʃən/ noun 1. a change to a different system or set of rules. □ The conversion of km into nm is not difficult. 2. □ Conversion course flying training which enables and qualifies a pilot to fly a different aircraft type.

convert /kənˈvɜːt/ verb to change to a different system or set of rules. □ To convert km into nm. How do you convert degrees C into degrees F?

converter /kənˈvɜːtər/ noun a device which alters the form of something. □ A backup converter converts the alternating current power into direct current.

convertible /kənˈvɜːtəb(ə)l/ adjective possible to change easily, e.g. to fit in with a new system or set of standards. □ The statute mile, unlike the nautical mile, is not readily convertible into terms of angular measurements.

convey /kənˈveɪ/ verb to carry or move from one place to another. □ A large number of tubes convey the cooling medium through the matrix. □ Buses are used to convey passengers from the aircraft to the terminal building. □ To convey information to pass information from one person to another, or from one place to another.

cool /kjuːl/ adjective a little cold. □ Cool weather which is not hot, warm nor very cold. □ Verb to become or cause to become less hot. □ The airflow is used to cool the oil. □ Air-cooled.

coolant /ˈkjuːlənt/ noun a substance, usually liquid, used to cool something such as an engine. □ Radiator coolant.

cooling /ˈkjuːlɪŋ/ noun the action of making something cool. □ The cooling of the oil by the airflow. □ Adjective reducing the temperature of something. □ Cooling medium a substance which reduces the temperature of another substance or material.

coordinate /kəʊˈɔːrdɪneɪt/ verb 1. to bring together the various parts of a procedure or plan to ensure that the operation works correctly. □ It is the task of air traffic controllers to coordinate the movement of traffic in and out of a terminal. 2. To make different parts of the body work well together. □ During a hover, helicopter pilots must be able to coordinate movements of both hands and feet.

coordinated flight /kəʊˈɔːrdɪnetɪd/ noun flight, especially during turns, in which the horizontal and vertical forces acting on the aircraft are in balance. □ In coordinated flight, the ball in the turn coordinator will be in the centre.

COMMENT: The ball in the balance indicator of the turn coordinator shows the pilot if the aircraft is in coordinated flight or if it is slipping or skidding. When the ball moves to the left the pilot should apply left rudder pedal pressure, if the ball moves to the right, the pilot should apply right rudder pedal pressure.

Coordinated Universal Time /kɔʊˌɔːrdɪnetɪd ,juːˈzɜːməˌvɜːs(ə)l/ noun time used in aviation based on the 24-hour clock format. □ GMT.

coordinates /kəʊˌɔːrdɪnəts/ plural noun values used to locate a point on a graph or a map. □ The airfield can be seen on the map at coordinates B:12.
coordination /kəʊˌdɪnəˈʃ(ə)n/ noun 1. the process of bringing together the various parts of a procedure or plan to ensure that it works correctly. 2. A rescue coordination centre is set up to control the emergency. 3. The ability to use different parts of the body together well.

copilot /ˈkɒpɪlət/ co-pilot noun a licensed pilot who is second in command to the captain of an aircraft.

core /kɔːr/ noun the central part, the heart of something. 1. The primary windings consist of heavy gauge wire mounted on a soft iron core. 2. the core of a problem the central, most fundamental part of a problem.

Coriolis force /kɔrɪˈɔːlɪs fɔːr/ noun 1. Coriolis force which accelerates the movement of a rotating mass perpendicular to its motion and towards the axis of rotation. 2. The Coriolis force explains why wind patterns are clockwise in the northern hemisphere and anti-clockwise in the southern hemisphere.

COMMENT: The Coriolis force acts at a right angle to wind direction and is directly proportional to wind speed. It is named after G. G. Coriolis, a French engineer who died in 1843.

correct /kərˈekt/ adjective

1. Right or wrong, as in an examination.

2. A pilot must have good hand/eye coordination.

3. The sulphur and water content of turbine fuels tend to corrode the components of the fuel and combustion sys...
corrosion /kəˈraʊzən/ noun the destruction of a material by chemical processes. Aluminium has high resistance to corrosion.

corrosion protection /kəˈraʊzən prəˈtekʃən/ noun action and/or measures taken to prevent corrosion such as rust.

corrosive /kəˈraʊsiv/ adjective causing corrosion.

cosine /ˈkɔˌsain/ noun a trigonometric function defined as the length of the hypotenuse.

counter- /ˈkaʊntə/ prefix against.

counterclockwise /ˈkaʊntərkwɜːz/ adjective, adverb US same as anticlockwise.

counter-rotating propellers /ˌkaʊntəˈrotɪnɡ prəˈpərlz/ plural noun propellers which turn in opposite directions. Also known as contra-rotating propellers.

couple /ˈkʌpl/ noun two of something; a couple of minutes two or three minutes. Verb 1. to connect or to join. Mechanical cohesion of a system.

coupling /ˈkʌplɪŋ/ noun a joining or connecting component. When not in use, the coupling is sealed by a dust cover.

course /kɔːs/ noun 1. an imaginary line across the surface of the Earth which must be followed in order to arrive at the destination. 2. to change direction or to follow a different route. Formal period of study. 3. a meteorology course which goes over something else completely.

course correction /ˌkaʊrˌsəkˈtʃərn/ noun heading correction.

course deviation indicator /ˌkaʊrˌdiˈvenʃən aɪˈdɪkter/ noun needle in an omni-bearing indicator which indicates if an aircraft is on a selected course. Abbreviation CDI.

cover /ˈkʌvər/ verb 1. to include e.g. the complete extent of a period of time or the whole of a particular area. The restriction covers the period from 4th-8th July.

cover /ˈkʌvər/ noun which goes over something else completely. Also known as cloud cover. The amount of cloud cover in snow. A noun which goes over something else completely.

coverage /ˈkʌvəræs/ noun 1. the amount of space or time given to a subject, event, etc. More complete coverage of the one-in-sixty rule is given in the plotting section of these notes. 2. the area within which a radar unit can detect objects. Glidepath coverage. Localiser coverage.

cowl /ˈkəʊl/ noun a covering usually made up of hinged or removable panels. Cowl flap a removable or hinged panel of a cowling. Further cooling can be obtained by the use of controlable cowl flaps which regulate the amount of air flowing across the cylinders.

cowling /ˈkauəlɪŋ/ noun a covering usually made up of hinged or removable panels. Access to the engine compartment is normally via hinged cowling panels.

CPL abbreviation Commercial Pilot’s Licence.
passages in the crankcase allow lubricating oil to pass through, so that the aircraft is damaged on landing. An airship is classified as a lighter-than-air craft.

Exhaust gas creates thrust in the turbine, which is used to drive the propellers. Components which are subjected to high temperatures weaken and slow damage to some extent. Creep is a particular feature of components which are subjected to operation at high temperatures. A slight movement of a tyre on a wheel caused by landing aligns white marks on the wheel and tyre indicate that there is no creep.

The aircraft crashed into the sea. The velocity and pressure of the air front first and crash, or cause an airfront to drop. A manoeuvre in which an aircraft is steered slightly into a crosswind to compensate for flying slightly off course is called crabbing. Some aircraft must demonstrate navigation skills and avoid collision or to have an accident or collision that causes damage. An aircraft is steered slightly into a crosswind to compensate for flying slightly off course an aircraft as much as the pilot expected.

Rpm is the number of revolutions per minute that an aircraft or spacecraft for carrying people or goods on water 2. an aircraft or spacecraft for carrying people or goods in the air or in space. An aircraft is steered slightly into a crosswind to compensate for flying slightly off course.

The aircraft crashed into the sea. The velocity and pressure of the air front first and crash, or cause an airfront to drop. A manoeuvre in which an aircraft is steered slightly into a crosswind to compensate for flying slightly off course is called crabbing. Some aircraft must demonstrate navigation skills and avoid collision or to have an accident or collision that causes damage. An aircraft is steered slightly into a crosswind to compensate for flying slightly off course.

The aircraft crash-landed short of the runway. The qualifying cross-country flight for the PPL cross-check doors closed and locked and escape slides armed. (NOTE: This word is often used in brief messages from one crew member to another, as from the pilot to cabin staff, to confirm that an action has been carried out.)

Critical point when the airflow over the upper surface of the wing begins to break down. Critical point when the airflow over the upper surface of the wing begins to break down.
cross-section /'krɒs ,sɛkʃən/ noun a view of an object seen as if cut through ○ The diagram is a cross-section of a turbojet engine.
crosswind /'krɒswind/ noun a surface wind which blows at an angle to the landing or take-off heading ○ On some aircraft, crosswind take-offs should be made with full aileron deflection in the direction from which the wind is blowing.

COMMENT: A crosswind landing is one of the most difficult exercises for a student pilot. The final approach is usually made with the aircraft yawed into wind, while tracking the extended runway centreline. Just before touchdown, the pilot aligns the aircraft with the direction of flight using the rudder pedals. Correct timing for the alignment and accurate airspeed is required to achieve positive contact with the runway surface otherwise the aircraft may depart the runway to one side.
crosswind component /'krɒs,wind kən'pəʊnənt/ noun that part of the wind force acting at an angle to the direction of flight
crosswind leg /'krɒswind leg/ noun part of the airfield traffic circuit flown at approximately 90° to the direction of take off and climb out, followed by the downwind leg
CRT /'sɪə tɪsi/ abbreviation cathode ray tube
cruise /'krʊz/ noun the main part of the flight between top of climb after take-off and descent for landing ○ verb to fly the main part of the flight between top of climb after take-off and descent for landing ○ We are cruising at 500 kt.
○ Cruising speed, cruising power and cruising altitude are selected to give maximum engine efficiency and prolong engine life.
cruising altitude /'krʊzɪŋ ,ɛlɪtɪtɪjʊd/, cruising level noun the altitude at which most of a flight is flown en route to a destination, from top of climb to top of descent ○ Our cruising altitude will be 35,000 feet.
cruising power /'krʊzɪŋ ,ˈpɔːrə/ noun engine power used to give required speed from top of climb to top of descent usually giving fuel economy and long engine life ○ Cruising power is about 2,300 rpm.
cruising speed /'krʊzɪŋ spɪd/, cruise speed noun the speed selected from top of climb to top of descent, usually giving fuel economy and long engine life ○ The cruising speed is 110 knots.
cruising weight /'krʊzɪŋ wɛt/ noun the weight of an aircraft in flight, consisting of its weight when empty, the weight of its payload, and the weight of the fuel that it has left
crush /krʌʃ/ verb to damage by pressure ○ Excessive load on the beam may crush the core.
crystal /'krɪstəl/ noun a regular geometric shape formed by minerals, or as water freezes
CSDU abbreviation constant speed drive unit
CSU abbreviation constant speed unit
CTA abbreviation control area
CTOT abbreviation calculated take-off time
CTR /'kʌn'troʊl/ abbreviation control zone
cubic /'kjuːbɪk/ adjective measured in volume, by multiplying length, depth and width ○ cubic centimetres (cc) the usual unit used to measure the capacity of an internal-combustion engine ○ The engine has a capacity of 2,000cc. Abbreviation cc ○ cubic foot, cubic inch, cubic metre, cubic yard the volume of a cube whose edge measures one foot, inch, metre or yard, respectively
cumuliform /'kjuːmjuːlɪfɔrm/ adjective which develop vertically ○ cumuliform clouds such as cumulonimbus
cumulonimbus /'kjuːmjuːlnɪbəm/ 'nɪmbəs/ noun a dark, low cumulus – type of cloud associated with thunderstorms ○ A cumulonimbus has a characteristic anvil shape. Abbreviation CB
cumulus /'kjuːmjuːləs/ noun big, fluffy, white or grey cloud heaped or piled up, which develops at low altitude ○ Cumulus clouds may develop because...
of thermal activity resulting from the warming of the surface. Grey cumulus often develop into cumulonimbus.

Cumulus cloud /ˈkjuːmləs klauð/ noun clouds which form only in an unstable atmosphere and, as the name suggests, often build vertically for great distances. Also called heap cloud.

Current /ˈkærənt/ adjective present, actual, happening at the moment. Current weather conditions present weather conditions at the moment. Current position the position now.

Curvature /ˈkɜːvətʃər/ noun a curved shape or the curving of the Earth's surface due to the spherical form of the Earth.

Customary /ˈkʌstəməri/ adjective normal or usual. It is customary for the senior cabin supervisor to introduce herself to passengers at the start of a flight.

Customs /ˈkʌstəms/ noun an official department of government concerned with movement of people and freight across national borders. Customs aerodrome an aerodrome, usually near a border or coast, with customs facilities.

Customs duty /ˈkʌstəms ˈdjuːti/ noun same as import duty. The duty payable on a carton of cigarettes.

Cycle /ˈsɪkl/ noun a series of actions which end at the same point as they begin. With the piston engine, the cycle is intermittent, whereas in the gas turbine, each process is continuous.

Life cycle of the thunderstorm cell the process of formation, development and decay of a thunderstorm.

Cyclic /ˈsɪklɪk, ˈsɪklɪk, ˈsɪklɪk(ə)/ adjective referring to or happening in a cycle. Off-shore and on-shore wind patterns are cyclic.

Cyclone /ˈsaɪklən/ noun a system of winds rotating inwards to an area of low barometric pressure. These areas of low pressure are called hurricanes in the Atlantic Ocean, cyclones in the Indian Ocean and Bay of Bengal, and typhoons in the China Sea. Also called low, depression.

Cyclonic /ˈsaɪklɒnɪk/ adjective referring to air movement, which turns in the same direction as the Earth and which, when seen from above, is anticlockwise in the northern hemisphere and clockwise in the southern hemisphere. In winter the sub-tropical high retreats and gives way to cyclonic pressure patterns which produce cool unsettled conditions with rain at times.

Cylinder /ˈsɪləndər/ noun a device shaped like a tube, in which a piston moves. Smaller aircraft have a static hydraulic system similar to a car, with a master cylinder and individual brake cylinders at each wheel. Cylinder block the casing containing the cylinders in an internal combustion engine. Cylinder head the removable top part of a piston engine cylinder containing plugs, inlet and exhaust connections and valves.
D abbreviation danger area
DA abbreviation danger area
DAAIS abbreviation danger area activity information service
DACS abbreviation danger area crossing service
DADC abbreviation digital air data computer
DADS abbreviation digital air data system
DALR abbreviation dry adiabatic lapse rate
damage /ˈdeɪmɪdʒ/ noun harm that is caused to something. If the temperature rises it can cause serious damage to the engine. A verb to cause harm to something. Small stones around the run-up area may damage propellers.
damage tolerance /ˈdeɪmɪdʒ əˈtɒlərəns/ noun the ability of a material or structure to withstand or resist damage. The structural efficiency of bonded and machined structure is not achieved at the expense of damage tolerance.
dampen /ˈdæmpən/ verb 1. to decrease or reduce. An accumulator is fitted to store hydraulic fluid under pressure and dampen pressure fluctuations. 2. to make slightly wet
damper /ˈdæmpər/ noun a device to decrease or reduce something. A yaw damper is used for rudder control.
D & D abbreviation distress and diversion cell
danger area /ˈdeɪndʒər eərɪə/ noun airspace of a particular length, width and depth, within which at particular times there may be activities which are dangerous to the flight of the aircraft. Abbreviation D, DA
danger zone /ˈdeɪndʒər zəʊn/ noun an area where danger exists
data /ˈdeɪtə/ noun 1. information made up of numbers, characters and symbols often stored on a computer in such a way that it can be processed. Airspeed information is supplied from an air data computer. 2. meteorological data information about weather conditions stored on a computer.
datum /ˈdeɪtəm/ noun a reference or base point of a scale or measurement, e.g. mean sea level
datum shift trim system /,deɪtəm ʃɪft ˈtrɪm ˌsɪstəm/ noun a trim system which varies the incidence of an all-moving tailplane without moving the cockpit controls. In some aircraft, the datum shift is operated automatically.
dB abbreviation decibel
DC abbreviation direct current
DCL abbreviation departure clearance
de- /diː/ prefix undo, remove or stop
decivate /ˈdɪkəveɪt/ verb to turn off a system or a piece of equipment thus stopping it being ready to operate. On some aircraft nose wheel steering must be deactivated prior to retraction.
dead reckoning /ˈded ˈrekənɪŋ/ noun navigation using calculations based on airspeed, course, heading, wind direction and speed, ground speed, and time. In the early stages of practical navigation, the student pilot navigates by using dead reck-
de-aerate /di: 'eərət/ verb to remove gas, especially carbon dioxide or air, from a liquid such as fuel. The pump helps to de-aerate the fuel before it enters the engine.

dehesion /dɪhɪˈʃeɪʃn/ noun the process of removing gas from a liquid such as fuel. Partial de-aeration of fuel takes place in the pump.

de-aerator /diːˈɛətər/ noun a device to remove gas from a liquid

deaeration tray /diːˈɛərətʃən ˈtreɪ/ noun a device in the lubrication system to remove air bubbles from oil

deal /dɪəl/ noun a great deal a large amount of, a lot of. A great deal of damage was done to the aircraft as a result of the fire. verb to handle or manage. A computer can deal with the constant inputs required to control an unstable aircraft.

debris /ˈdɪbrəs/ noun scattered broken pieces. Before running up the engine, check that the aircraft is on firm ground and that the area is free of stones and other debris. The aircraft exploded in mid-air, spreading debris over a wide area of the countryside.

decal /dɪˈkæl/ noun picture, letters or digits printed on adhesive paper, which is transferred onto a surface and may be peeled away. A red decal with AVGAS 100LL in white letters indicates the type of fuel to be used.

decelerate /dɪˈsɛləreɪt/ verb to slow down. Reverse thrust and brakes help to decelerate the aircraft after landing. Opposite accelerate.

deceleration /dɪˈsɛlərəʃn/ noun slowing down. Anti-skid braking systems units are designed to prevent the brakes locking the wheels during landing, thus reducing the possibility of wheel skid caused by the sudden deceleration of the wheel. Opposite acceleration.

decibel /dɪˈsɪbəl/ noun a unit for measuring the loudness of a sound. Abbreviation dB.

decimal /ˈdɛsɪm(ə)l/ noun a decimal fraction. 

activated: a decimal fraction a fraction as expressed in the decimal system. 0.50 is a decimal fraction that is equal to 1/2. correct to three places of decimal or to three decimal places correct to three figures after the decimal point. 2.73 is correct to one decimal place.

decimal notation /ˈdɛsɪm(ə)l ˈnætərəˈteɪʃn/ noun the method of writing a number in the decimal system. The fraction 3/4 can be written as 0.75 in decimal notation. Prices and numbers are normally written using decimal notation. He finds it difficult to understand how the computer works because it uses binary not decimal notation.

decimal place /ˈdɛsɪm(ə)l ˈplɛs/ noun the position of a number to the right of the decimal point.

decimal point /ˈdɛsɪm(ə)l ˈpɔɪnt/ noun the dot (.) used to separate a whole number from a decimal fraction.

COMMENT: The decimal point is used in the USA and Britain. In most European countries a comma (,) is used to show the decimal, so 4.75% in Germany is written 4.75% in Britain.

decimal system /ˈdɛsɪm(ə)l ˈsistəm/ noun a system of counting based on the number 10 and using the digits 0–9.

decision /dɪˈsɪʒn/ noun the act of deciding or of making up one’s mind to make a decision. The pilot decided whether to land or carry out a missed approach. The pilot waited until she was at decision height before initiating the missed approach procedure. Abbreviation DH.

COMMENT: An ILS approach generally has a decision height of 200 ft (60 m) above ground level.

deck /dɛk/ noun the floor of a ship or aircraft.
decode /dɪˈkɔːd/ verb to change coded information into readable form. Incorrectly spaced information pulses can result in failure by the ground station to decode the aircraft information.

decoder /dɪˈkɔːdər/ noun a device used to decode signals from the air traffic control radar beacon system. The aircraft receiver is set to the required frequency and linked to a selective call system decoder which has a 4-letter code.

decree noun /ˈdɪkrɪs/ a lessening or reduction. A decrease in power results in the aircraft descending. verb /ˈdɪkrɪs/ to become less, to fall. Air density and pressure decrease with an increase in altitude.

deduce /ˈdɪdʒus/ verb to work something out in the mind using information provided. Sometimes, it is possible to estimate the depth of the layer of mist or fog from the ground observations and hence to deduce the ground range from any height.

defect /ˈdɪfekt/ noun a fault or error. Low oil pressure or excessive temperature indicate the development of a possible defect.

defective /ˈdɪfektɪv/ adjective faulty or not operating correctly. Loss of supply pressure is caused by either a defective booster pump or lack of fuel.

define /dɪˈfain/ verb 1. to give an exact explanation, as in a dictionary. It is not easy to define the word: it is difficult to say exactly what the word means. 2. to set the limits of something. Cloud tops are very difficult to define.

definite /ˈdɛfɪnɪt/ adjective referring to something which is not in doubt, which is certain. Using a time scale on the track, the pilot should be prepared to look for a definite feature at a definite time. Opposite indefinite.

definition /dɪˈfɪnaʃən/ noun an exact explanation of what a word or expression means. The definition of a year is the time taken for a planet to describe one orbit around the sun. By definition understood by the use of the word itself. A sphere is, by definition, round.

deflate /dɪˈflɛt/ verb to allow air to escape from something, so that it becomes smaller or collapses. Opposite inflate to deflate a tyre to allow the air to escape from a tyre.

deflation /dɪˈfleʃən/ noun the act of allowing air to escape from something, so that it becomes smaller or collapses. Deflation of a tyre is done by depressing the valve.

deflect /dɪˈflekt/ verb 1. to cause an object to move away from a neutral or central position. During an out-of-balance turn, the ball in the slip indicator will be deflected to the left or right. 2. to move a moving object, gas or liquid away from its intended path. In an open-cockpit aircraft, the windshield deflects the airflow over the pilot’s head.

deflection /dɪˈflektʃən/ noun 1. movement away from a central or neutral position. Full deflection of the ailerons is sometimes needed on take-off to counteract a crosswind. 2. the movement of a moving object, gas or liquid away from its intended path. In the southern hemisphere the deflection of wind at the equator is to the left.

deformation /dɪˈfɔːməʃən/ noun a change of the correct shape caused by stress. Deformation of wing panels may be an indication of serious structural damage.

deg abbreviation degree.

degradation /dɪˈgreɪʃən/ noun a decrease in quality. Degradation of the radio signal sometimes makes it impossible to understand the message.

degrade /dɪˈɡreɪd/ verb to decrease the quality of something. Interfering signals degrade VOR performance.

degree /dɪˈɡri/ noun 1. a level, amount or quantity. The degree of compression the amount of compression. A high degree of safety a high level of safety. 2. a unit of temperature. Twenty degrees Celsius (20°C) twenty degrees Centigrade (20°C) seventy
degrees Fahrenheit (70°F) 3. a unit of measurement of an angle equal to 1/360th of a circle – each degree is divided into 60 minutes and each minute into 60 seconds. o Make a turn to the right at a bank angle of 30°. o an angle of 90° a right angle. 4. a unit of direction as measured on a compass. o east = 090° o west = 270°

degrees true/dʒiːəzk / ˈtruː/ noun degrees of direction measured from true north, not magnetic north. Also called true degrees. Symbol °T

dehydration/ˈdɛhɪdˌreɪʃ(ə)n/noun an unwanted and sometimes dangerous loss of water from the body. o Dehydration can be avoided by drinking plenty of water.

de-ice/diːˈaɪs/ verb to remove ice o The ground crew de-iced the aircraft prior to take-off.

de-icer/diːˈaɪsər/ noun a device or substance used to remove ice. o De-icer spray should be checked to make sure it is not harmful to light aircraft wind-screens.

de-icing/diːˈaɪsɪŋ/ noun the removal of ice. o adjective referring to the removal of ice. o de-icing fluid. o anti-icing. o icing.

delay/delɪˈeɪ/ noun a period after the expected time that you have to wait before something happens. the length of time by which something is late. o By day, the presence of cloud can cause a delay in clearance of fog. o verb 1. to make late, to cause to be late. o Take-off was delayed because of fog. 2. to put something off until later. o He delayed telling her the news until they had landed.

delayed-action/dəˈleɪd əˈkʃən/ adjective in which there is an unusual passing of time between stimulus and response. o The door is fitted with a delayed-action lock which operates one minute after the power has been switched off.

deliver/dɪˈlɪvər/ verb to provide, to give. o The motor will continue to run but will deliver only one-third the rated power. o The pump can deliver fuel at the rate of 2,000 gph.
Density error /'densəti/, erə/ noun a correction to airspeed to give true airspeed

Dep abbreviation departure message

depart /dɪˈpɑːrt/ verb to leave ○ The flight departs at 0200 GMT. Opposite arrive
department /dɪˈpɑːtment/ noun a separate part of a complex whole, especially of an organisation
departure /dɪˈpɑːtʃər/ noun 1. the act of leaving ○ departure time the time when an aircraft becomes airborne 2. the distance between two meridians at any given latitude
departure lounge /dɪˈpɑːtʃəl/ noun a room at an airport where passengers wait to board their aircraft
departure point /dɪˈpɑːtʃər pɔɪnt/ noun a place on the map representing the place from which a flight begins
departures /dɪˈpɑːtʃərz/ noun the part of an airport that deals with passengers who are leaving
depend /dɪˈpend/ verb 1. to be controlled or affected entirely by something ○ Whether or not an object can be seen by aircrew at a given distance will depend on factors such as size, shape and colour of the object. ○ If an aircraft ditches in the sea, early rescue depends on rapid location of survivors. 2. to rely on ○ Pilots depend on air traffic controllers to help them conduct a safe flight.
dependable /dɪˈpendəb(ə)l/ adjective reliable, trustworthy ○ Mercury barometers have largely been replaced by precision aneroid barometers which are smaller, simpler to use, and more dependable.
dependent /dɪˈpendənt/ adjective relying on or unable to do without something ○ The height indicated by an altimeter is dependent on the pressure which is set on the sub-scale.
deploy /dɪˈpləʊ/ verb to come into action, to become ready to be used ○ Slide rafts are door-mounted and automatically deploy and inflate when the door is opened in the armed position.
deposit /dɪˈpɒzɪt/ noun a layer of collected matter on a surface ○ A deposit of ice crystals causes the aircraft surfaces to change their aerodynamic characteristics. ○ Wheel brakes should be inspected for snow or ice deposits.
depreciate /dɪˈprɛʃiət/ verb to decrease in value ○ The aircraft depreciated by 100% over the 5 year period. Opposite appreciate
depreciation /dɪˈprɛʃiəʃən/ noun a decrease in value ○ There was a depreciation of 100% in the value of the aircraft over the 5 year period. Opposite appreciation
depress /dɪˈpreʃs/ verb to push down ○ Switches on the control columns instantly disengage the autopilot when depressed.
depression /dɪˈpreʃən/ noun 1. an area of low atmospheric pressure ○ In the northern hemisphere, the wind blows anticlockwise round a depression and clockwise round an anticyclone and vice versa in the southern hemisphere. ○ deep depression area of very low relative atmospheric pressure 2. a lower area on a surface, which is often difficult to see ○ A depression on the wing surface must be investigated in case it is an indication of more serious structural damage.
depressurisation /dɪˈpreʃəraɪzəʃən, ˈdɛprɛʃəraɪzəʃən/ noun a depression ○ The aircraft began to depressurise at 20,000 feet.
depth /dɛpθ/ noun the distance from the top surface of something to the bottom ○ The troposphere’s depth is variable in temperate latitudes.
derive /dɪˈraɪv/ verb to get or to obtain ○ Performance data is derived from flight tests. ○ Kepler derived the laws which relate to the motion of planets in their orbits.
descend /dɪ'send/ \verb verb to lose altitude, usually in a planned manoeuvre \same\ the aircraft descended to 10,000 feet the pilot reduced altitude until the aircraft was at 10,000 feet. Opposite climb, ascend
descent /dɪ'sɛnt/ \verb noun a planned loss of altitude \same\ The descent from cruise altitude took 40 minutes. \same\ in the descent during planned loss of altitude, usually in preparation for landing
   \same\ a search of radar recordings showed that a DC-10 had tracked within a few hundred metres of the house while passing 9,500 feet in the descent to Gatwick [Pilot]
describe /dɪ'skræb/ \verb 1. to give the particular features of something \same\ to describe what happened put into words exactly what happened 2. to draw a geometric figure or to move in a line that forms a geometric figure \same\ The definition of a year is the time taken for a planet to describe one orbit around the sun. \same\ to describe an arc to draw or move in an arc
description /dɪ'skripʃən/ \noun 1. the act of giving the particular features of something \same\ a detailed description of world climate 2. the drawing or making of a geometric figure \same\ the description of a triangle the drawing of a triangle
desert /dɪ'zɛrt/ \noun a large area of dry often sandy country \same\ Over desert areas the lack of water vapour produces cold nights.
design /dɪ'zaɪn/ \noun 1. a plan or drawing of something before it is made \same\ The design and testing of aircraft are important stages in the development programme. \same\ verb to draw plans using accurate information in preparation for constructing something \same\ to design an aircraft to have the idea, make drawings, calculate data, etc., with the intention of producing an aircraft
designate /dɪ'zɪgnət/ \verb to choose for a special purpose \same\ This region is designated as a fire zone.
designator /dɪ'zɪgnətə/ \noun a group of letters and/or numbers that identify something

desirable /dɪ'zɛrəbl/ \adjective preferred or wanted \same\ Equalisation of the air pressure across the earth is more difficult to achieve during descents than ascents, and a minimum rate of pressure change is desirable.
despite /dɪ'spɔt/ \preposition in spite of \same\ Many beacons and aids which are provided for low operations are left out to keep the chart clear – despite this, the charts still look very difficult to understand. \same\ despite the weather, we took off although the weather was bad, we took off
DEST \abbreviation destination
destination /dɪ'stɛnʃən/ \noun the place to which somebody or something is going \same\ Aerodrome forecasts are normally given in code form for destination and alternates.
destroy /dɪ'streɪʃə/ \verb to damage so much as to make useless \same\ The aircraft was destroyed in the accident.
destruction /dɪ'strækʃən/ \noun an act or instance of making completely useless by breaking \same\ By testing selected parts to destruction, a safe life can be assessed for all structures and components.
destructive /dɪ'strʌktɪv/ \adjective referring to something which destroys \same\ the winds of a tornado are extremely destructive tornadoes cause a lot of serious damage
detach /dɪ'tætʃ/ \verb to remove a part from something, or to be removed \same\ A fuselage panel became detached and had to be replaced. \same\ The parachute flare is a device which is fired to a height of 1,200 ft where a red flare and parachute detach.
detachable /dɪ'tætʃəbəl/ \adjective referring to something which can be unfixed and removed
detachable wheel spats /dɪ'tætʃəbəl \'wɪl ,sپəts/ plural noun
streamlined coverings for the wheels of light aircraft which can be taken off to allow inspection and repairs of tyres
detail /ˈdɪteɪt/ noun the important and less important facts about something ○ The amount of detail which appears on a topographical chart depends upon the scale.
detect /dɪˈtek(t)/ verb to discover the presence of something ○ Apart from sensing the abnormal rate of descent of a false glide slope, the pilot can detect an error by comparing height with distance to go.
detection /dɪˈtektʃən/ noun the discovery of the presence of something ○ ice detector a device for detecting the presence of ice on the airframe ○ When ice forms on the vibrating rod ice detector head, the probe frequency decreases.
deteriorate /dɪˈtɪərɪərət/ verb to become or make bad or worse ○ The electrolyte in the cells of a nickel-cadmium battery does not chemically react with the plates and so the plates do not deteriorate. ○ deteriorating weather worsening weather
deterioration /dɪˌtɪərɪəˈreɪʃən/ noun worsening ○ a deterioration in the situation a worsening of the situation
determination /dɪˌtɜːməˈneɪʃən/ noun 1. the act of finding out by calculation ○ Structure design for a given safe life has led to the determination of the minimum number of flying hours which should pass before major failure occurs. 2. the strength of mind to do what is required ○ Determination was a major factor in the trainee passing his exams.
determine /dɪˈtɜːrn/ verb 1. to find out by calculation ○ To determine the average age, divide the total number of years by the number of people. ○ When we wish to fly from one place to another, it is first necessary to determine the direction of the destination from the departure point. 2. to set or to fix precisely ○ On a large transport aircraft, the safety of hundreds of passengers is involved, and regulations determine the minimum crew that must be carried.
detonation /dɪˈteɪʃən/ noun a sudden, explosive burning of the air/fuel mixture ○ Prior to the accident, engine detonation could be heard by people on the ground.
COMMENT: Detonation imposes excessive loads on the pistons and other engine components, possibly causing engine damage and resulting in engine failure.
development /dɪˈveləpmənt/ noun 1. something new, made as an improvement on something older ○ Satellite navigation aids for light aircraft are a recent development. 2. growth and change ○ To study weather and its development, the meteorologist has to be aware of the horizontal changes in atmospheric pressure both in space and time.
deviate /dɪˈvaɪət/ verb to move away from the normal position or path ○ If the aircraft deviates beyond the normal ILS glide slope, the flight crew are alerted.
device /dɪˈvaɪs/ noun an object, especially mechanical or electrical, which has been made for a particular purpose ○ A capacitor is a device with the ability to temporarily store an electric charge.
dew /ˈdjuː/ noun drops of condensed moisture left on the ground overnight in cool places
dew point /ˈdjuː plɔɪnt/ noun the temperature at which air is saturated with water vapour and condensation begins

COMMENT: Weather reports usually include the air temperature and dew point temperature. When the difference between temperature and dew point is small, there is a strong possibility of fog, clouds, or precipitation.

DF abbreviation direction finding
DFDR abbreviation digital flight data recorder
DFR abbreviation departure flow regulation
DFTI abbreviation Distance from touchdown indicator
DH abbreviation decision height
DI abbreviation direction indicator
diagonal /ˈdaɪəɡən(ə)l/ adjective 1. joining two opposite corners of a rectangle 2. sloping halfway between the vertical and horizontal • Early aircraft were of the wire braced type of construction, the wire being superseded by tubular diagonal struts. ■ noun a line joining two opposite corners of a rectangle

diagram /ˈdaɪəɡrəm/ noun an often simplified drawing showing the structure or workings of something • The diagram shows a simple open-circuit system.
diagrammatic /ˌdaɪəɡrəˈmatɪk/ adjective referring to something which is shown as a drawing of a system or structure □ diagrammatic format in the form of a diagram
dial /ˈdaɪəl/ noun the face of an instrument showing a scale • A cup anemometer is connected to an instrument with a dial showing wind speed in knots.
diameter /ˈdaɪətərmətər/ noun the distance from one side of a circle to the other, passing through the centre □ equatorial diameter the distance from the equator, through the centre of the Earth to the equator on the opposite side of the globe
diaphragm /ˌdaɪəˈfrem/ noun a thin sheet of material used to separate parts or chambers • Some switches are operated by a diaphragm which flexes under fluid or air pressure.
differ /ˈdɪfər/ verb to be unlike • Track and heading differ by the amount of drift. • Because the chart time and the departure/arrival times differ, it is necessary to consider the movement of any weather system which might affect the route.

differential /ˌdɪfəˈrɛnʃəl/ adjective referring to things which react differently when measured against a norm or standard • differential heating of the atmosphere the heating of the atmosphere to varying temperatures depending on the relative warmth of the land at the equator and the poles

differential expansion switch /ˌdɪfəˈrenʃəl ɪŋˈskrən肿tʃ/ noun a switch which operates on the principle that the coefficients of expansion of dissimilar metals are different
differentiate /ˌdɪfəˈrɛntjət/ verb to recognise the difference between two things; to show two things to be different • Some types of colour blindness make the sufferer unable to differentiate between blue and red.
diffraction /ˈdɪfræks(ə)n/ noun the breaking down of a beam of radiation • Diffraction produces a surface wave which follows the curvature of the earth.
diffuse /ˈdɪfrjuːs/ adjective spread out in every direction • Glare caused by diffuse reflection of sunlight from the top of a layer of fog or haze can seriously reduce air-to-ground visibility. ■ verb to spread out in every direction • Light diffuses as it passes through fog.
diffuser /ˈdɪfrjuːzər/ noun a device in a jet engine that alters the direction of flow of the air entering the engine as part of the process of compressing it before it reaches the combustion chamber
diffusion /ˈdɪfjuːʒən/ noun the process of spreading out • Gas from the turbine enters the exhaust system at high velocities but, because of high fric-
Action losses, the speed of flow is decreased by diffusion.

**digit** /ˈdɪdʒɪt/ noun any number from 0 to 9. Information is provided in a four-digit group.

**digital** /ˈdɪdʒɪtəl/ adjective referring to a system or device which uses signals or information in the form of numbers.

**dihedral** /ˌdaɪˈhɪdrəl/ noun the angle between an upward sloping aircraft wing and a horizontal line.

**diluted** /ˈdaɪljuːtɪd/ adjective made weaker by adding water or some other fluid. Spillage from a lead acid battery may be neutralised by washing with a diluted solution of sodium bicarbonate.

**diluter** /ˈdaɪljuːtər/ noun a device for decreasing the strength or concentration of a liquid or gas. Most flight decks use the diluter demand system in which the oxygen is diluted with cabin air.

**dimension** /ˈdɪmənʃən/ noun a measurable distance such as height, length, etc., or a measurement of height, length, etc. Variations of atmospheric pressure produce changes in the dimension.

**diminish** /ˈdaɪmɪnɪʃ/ verb to decrease or to reduce in size or importance. Friction is greatest near the ground and diminishes with height. At higher altitudes, ground objects are less easily seen because of diminished size.

**diode** /ˈdaɪəʊd/ noun an electronic component that allows an electrical current to pass in one direction and not the other.

**dioxide** /ˈdaɪəksɔɪd/ noun an oxide containing two atoms of oxygen.

**dip** to move e.g. the wing or nose of an aircraft so that it points downwards.

**direct** /ˈdɪrɪkt/ adjective 1. in a straight line; by the shortest route. 2. complete. 3. the direct opposite. 4. verb to guide or control the movement of something. Clamshell doors are hydraulically or pneumatically opened, and direct the exhaust gases forwards to produce reverse thrust.

**direct current** /ˈdaɪrɪkt kəˈrænt/ noun an electric current flowing in one direction only. An electric starter is usually a direct current electric motor coupled to the engine, which automatically disengages after the engine starts. Abbreviation DC.

**direction** /ˈdaɪrɪkʃən/ noun the course taken by somebody or something. The Earth rotates about its own axis in an anticlockwise direction.

**directional** /ˌdaɪrɪkˈʃənl/ adjective referring to the course taken by somebody or something.

**directional gyro** /ˌdaɪrɪkˈʃənl ˈdʒɜːroʊ/ noun a gyroscope instrument which indicates direction but does not have a north-seeking magnet. The directional gyro should be set to correspond with the magnetic compass.

**heading indicator** noun an instrument which gives direction information. Abbreviation DI.

**directional radar beam** /ˈdaɪrɪkˈʃən rəˈbɛm/ noun a signal from a directional beacon enabling the pilot to determine a bearing from the beacon with a communications receiver.

**direction indicator** noun an unwanted situation or condition, or a factor which makes somebody or something less likely to succeed. The disadvantage of a booster pump is that the output is constant so that when engine demand is high, fuel pressure...
tends to be low and vice versa. Opposite advantage
disadvantaged /dɪsəˈdentɪdʒ/) adjective physically disadvantaged (person) a person who has a physical disability

COMMENT: The word ‘disadvantaged’ may be regarded by some people as a politically correct term for ‘disabled’. With the help of specially-adapted controls, more and more disabled people are learning to fly.
disappear /dɪsəˈpər/ verb 1. to vanish if air blew at right angles to isobars, the horizontal pressure differences would eventually disappear. 2. to pass out of sight the aircraft took off, climbed out and soon disappeared from view.
disarm /dɪsərəm/ verb 1. to switch off an active or live system on the ground approaching the terminal, the flight deck will instruct the cabin crew to disarm the escape devices. 2. to forcibly remove a weapon from somebody. The hijacker was disarmed by security forces.
disc /dɪsk/ noun a circular flat plate a turbine consists of a disc on which is mounted a number of blades.
discharge /dɪskərædʒ/ noun a release of power from a source such as a battery a lightning flash is a large-scale example of an electrical spark, or discharge. battery discharge the loss or release of electrical supply from a battery verb to release electrical supply from a source such as a battery. The battery discharged overnight.
disconnect /dɪskəˈnekt/ verb to separate two things attached to one another. The electrical supply can be disconnected by pulling out the plug.
discrimination /dɪskrɪˈmeɪʃn/ noun the ability to know or see the difference between two similar things. Targets on the same bearing which are separated radially by less than half a pulse length distance will appear at the receiver as one echo, so good target discrimination requires short pulses.
discuss /dɪsˈkʌs/ verb to write about or talk about a subject. This chapter will discuss HF and VHF voice communications.
disembark /dɪsˈembaːk/ verb to leave the aircraft after landing. The passengers finally disembarked at 20.00 hours.
disembarkation /dɪsˈembaːkəˈʃn/ noun the act of leaving the aircraft after landing. The exits are used as conventional doors for disembarkation.
disengage /dɪsˈenɡədʒ/ verb to switch off a system or device. Switches on the control columns instantly disengage the autopilot when depressed.
dish /dɪʃ/ noun a shallow container for food.
dish antenna /dɪʃ ˈæn.tə/ noun a circular antenna with a shape like a shallow bowl.
disintegration /dɪsɪˌtɪgrəˈʃn/ noun the falling apart or destruction of something. Electromagnetic radiations resulting from the disintegration of radioactive materials are known as gamma rays.
dismantle /dɪsˈmæntl/ verb to take apart into single components. One type of inspection is able to reveal fatigue cracks, corrosion, internal damage, the presence of loose articles and mercury spillage without the need to dismantle the aircraft. Opposite assemble (NOTE: The verb ‘mantle’ is not used.)
disorientation /dɪsɪˌɔrɪˈtɛnʃn/ noun a state of confusion in which there is loss of understanding of where one is or which direction one is facing, etc. When the cabin is rapidly and completely filled by smoke and fumes passengers will suffer from disorientation.
dispensation /dɪspənˈseʃn/ noun permission not to have to do something. At very high altitudes the flying pilot must be on oxygen at all times, unless an aircraft dispensation has been obtained.
dispense /dɪsˈpens/ verb to give out or distribute. In some cases the rivets are dis-
dispersal /dɪˈspɛər(ə)l/ noun 1. the act of leaving an area and going in different directions ○ the dispersal of a crowd. 2. the clearing away of something such as mist, e.g. by the wind ○ the dispersal of hill fog ○ Dispersal of cloud takes place when surface heating lifts the cloud base or drier air is advected.  
disperse /dɪˈspɛəs/ verb 1. to leave an area going in different directions ○ the crowd dispersed the people in the crowd left the area, going in different directions, so that eventually the crowd disappeared 2. to clear away ○ The fluorescent green dye will disperse slowly in a calm sea but quickly in a moderate to rough sea.  
displace /dɪsˈpleɪs/ verb to move something out of its normal position ○ The atmosphere is said to be stable if, when a parcel of air is displaced vertically, it tends to return to its original level.  
displacement /dɪsˈpleɪsmənt/ noun movement away from the normal position ○ The ILS is a cross-pointer indicator which shows the aircraft horizontal displacement from the localiser and vertical displacement from the glide path.  
display /dɪˈspleɪ/ noun 1. the appearance of information on a monitor screen or on the panel of an instrument or of an indicator ○ There are three different types of electronic display systems: EFIS, EICAS and ECAM. ○ digital display information shown as numbers ○ The clock uses a digital display to show the time of 12:33. 2. a show or demonstration ○ verb to show, e.g. on a panel or a screen ○ Alerting and warning information is displayed.  
disseminate /dɪˈsɪmɪnət/ verb to send out or spread ○ Meteorological stations make routine weather observations at fixed intervals and disseminate this information locally.  
dissimilar /dɪˈsɪməl/ adjective referring to something which is not the same as, or is unlike, something else ○ Different expansion switches operate on the principle that the coefficients of expansion of dissimilar metals are different.  
dissipate /dɪsˈspɪteɪ/ verb to spread out and lose power or strength, or to cause something to do this ○ Tropical storms often dissipate as they pass from sea to land.  
dissipation /dɪsˈpɛrəʃ(ə)n/ noun the process of spreading out and losing power or strength ○ The rubber used on nose or tail wheels is usually constructed to form a good electrical conductor for the safe dissipation of static electricity.  
dissolve /dɪˈzɒlv/ verb to become or to cause to become part of a liquid and form a solution ○ Sugar dissolves in water. ○ There is a possibility that in some types of accumulator, gas may be dissolved into the fluid and thus introduced into the system.  
dissolved /dɪˈzɒlvd/ adjective that has melted and become of a liquid ○ dissolved water water in solution in fuel  
distance /ˈdɪstəns/ noun a space between two places or points, or the measurement of such a space ○ The distance from point A to point B is 100 nm. ○ The distance from point A to point B on the diagram is 2 cm. ○ The height of the aircraft is the vertical distance, measured in feet, of the aircraft above the surface of the Earth.  
distance measuring equipment /ˈdɪstəns ˈmiːʒərɪŋ ɪˌkwɪpəmənt/ noun an airborne secondary radar whose signal is converted into distance ○ It is quite common to find a VOR located together with DME (Distance Measuring Equipment) to give simultaneous range and bearing from the same point on the ground. Abbreviation DME  
COMMENT: DME equipment is usually located in a VOR station. Other equipment in the aircraft transmits a signal to the VOR station, which replies. The equipment in the aircraft converts the signal into distance and also calculates ground speed and the time needed to reach the station.
**distillation** /ˈdistɪleɪʃən/ noun the process by which a liquid is heated and the resulting vapour is then condensed and collected. With kerosene-type fuels, the volatility is controlled by distillation.

**distinct** /ˈdɪstɪŋkt/ adjective clear and easily seen or understood. When a lead-acid battery is fully charged, each cell displays three distinct indications.

**distinction** /ˈdɪstɪŋkʃən/ noun something which makes one thing different from another. A clear distinction is made between showers and general precipitation.

**distinctive** /ˈdɪstɪŋktɪv/ adjective easily recognised because of particular features or characteristics. Concorde is a very distinctive-looking aeroplane.

**distinguish** /ˈdɪstɪŋgwɪʃ/ verb to know or to see the difference between things. A receiver antenna would be unable to distinguish between signals unless they had some differing characteristics.

**distinguishable** /ˈdɪstɪŋgwɪʃəbl/ adjective easily recognised as different from. Useful ground features must be easily distinguishable from their surroundings.

**distort** /dɪˈstɔːr/ verb 1. to put out of shape. Stress could cause the body of the aircraft to distort or change its shape. 2. to produce a bad radio signal. The sound of the transmission is distorted if the volume is set too high.

**distortion** /dɪˈstɔːʃən/ noun 1. the bending or twisting of something so that it is out of shape. Difficulty in closing a door may be caused by distortion of the airframe. 2. alteration of the electrical signal that makes a transmission unclear. Distortion of the signal made it difficult for the controller to understand what the pilot said.

**distress** /dɪˈstreɪs/ noun 1. serious danger or difficulty. A personal worry or anxiety. Some passengers were in distress after the incident.

**distress and diversion cell** /dɪˈstreɪs ənd dɪˈvɜːʃən ˌsel/ noun a unit at an air traffic control centre that provides immediate assistance to aircraft in difficulty.

**distress signal** /dɪˈstreɪs ˈsɪɡnəl/ noun a signal transmitted by an aircraft in danger.

**distribute** /dɪˈstreɪbjʊt/ verb 1. to give or send out. There are two basic configurations which are used to distribute electrical power, the parallel system and the split bus system. 2. to spread over a wide area. Multiple wheel undercarriage units distribute the weight of the aircraft.

**distribution** /dɪˈstreɪbjʊən/ noun 1. the act of giving or sending out. Parallel AC and DC power distribution systems are found on commercial aircraft containing three or more engines. The fact of being spread over an area. There is a high distribution of used and disused airfields in the south of England.

**distributor** /dɪˈstreɪbjʊtər/ noun a device which sends an electrical charge to each spark plug in turn. The distributor directs the high voltage impulses to the cylinders in turn as they reach their ignition point.

**disturb** /dɪˈstɜːb/ verb to upset the normal condition of something. Small hills can disturb the flow of air.

**disturbance** /dɪˈstɜːrəns/ noun something that upsets the normal condition of something. In general, the higher the mountain and the faster the air flows the greater is the resulting disturbance.

**ditch** /dɪtʃ/ verb to land a plane in the sea, in an emergency. Even though aircraft have ditched successfully, lives have been lost because life rafts were not launched in time.

**ditching** /dɪtʃɪŋ/ noun the act of landing a plane in the sea, in an emergency. After all four engines stopped, the captain had to seriously consider the possibility of a ditching in the Indian Ocean.

**diurnal** /daiəˈrən(ə)l/ adjective referring to the 24-hour cycle of day and night. Diurnal changes in surface temperature over the sea are small.
dive /dəv/ noun a steep nose-down attitude of an aircraft. To pull out of or from a dive to return the aircraft to level flight after a nose-down flight path. During manoeuvring of an aircraft, when banking, turning and pulling out from a dive, stresses on the airframe are increased. • verb to put the aircraft into a steep nose-down attitude. • The aircraft dived to avoid the other aircraft. (NOTE: diving – dived)
diverge /dəvəʒ/ verb to move further apart from something else. • Air diverges at low levels and converges at high levels, causing a sinking or subsid- ing effect in the atmosphere. Opposite convergence
divergence /dəvərʒəns/ noun the act of moving apart. • Divergence of air at high levels leads to rising air at low levels with a consequent pressure fall. Opposite convergence
divergent /dəvərʒənt/ adjective referring to something which moves further apart from something else
divergent duct /dəvərʒənt dəkt/ noun a duct which has an inlet area which is smaller than the outlet area
diversion /dəvərʒən/ noun a change in route or destination caused by bad weather, technical problem, etc. • The aircraft had to make a diversion to another airport due to fog.
divert /dəvərt/ verb to turn away from a course or a destination. • An automatic cut-out valve is fitted to divert pump output to the reservoir when pressure has built up to normal operating pressure. • The aircraft was diverted to Manchester airport because of fog.
divide /dɪvɪd/ verb 1. to separate into parts. • Air masses are divided into two types according to source region and these are known as polar and tropical air masses. 2. to calculate how many times a number is contained in another number. • Eight divided by four equals two (8 ÷ 4 = 2).
division /dɪvɪʒən/ noun 1. separation into parts. • The division of the lower atmosphere the separation of the atmosphere into its component layers.

The calculation of how may times a number is contained in another number.

DME abbreviation distance measuring equipment
document /dəˈkjʊmənt/ noun a piece of writing, e.g. a memo, letter or report. • The flight crew route flight plan is a composite document which also serves as a navigation log.
domestic /dəˈmestɪk/ adjective referring or belonging to inside a country. • Domestic flights usually leave from Terminal 1.
dominant /dəˈmɪnənt/ adjective main or most influential. • Both pressure and temperature decrease with height but the pressure change is the dominant one and so, as pressure decreases with height, so does density.
dominate /dəˈmɪneɪt/ verb to have the most effect or influence on. • Because the chart time and the depart- ure/arrival times differ, it is necessary to consider the movement of any weather system which will dominate the route.

Doppler radar /dəˈplər/ noun radar which can distinguish between fixed and moving targets or provide ground speed and track information from an airborne installation
Doppler VOR /dəˈplər ˈvɔːr/ noun an adaptation of VOR to reduce errors caused by location
dot /dɒt/ noun a small circular mark on paper. • The highest point in a locality is marked by a dot with the elevation marked alongside.
downdraught /daʊndrəʊft/ noun 1. cool air which flows downwards as a rainstorm approaches. Opposite updraught 2. air which flows rapidly down the lee side of a building, mountain, etc. (NOTE: It is also written down- draft in US English.)
downstream /dou'nstrom/ adverb in the direction of flow, or further along the line of flow. Internally driven superchargers are generally used on medium and high powered engines and are fitted downstream of the throttle valve.

downward /daun'woʊd/ adjective moving to a lower level. When flying in turbulent air conditions, an aircraft is subjected to upward and downward gust loads.
downwards /daun'woʊdz/ adverb to a lower level, towards the bottom. Pull the toggles downwards to inflate the life jacket. Opposite upwards (Note: In US English, downward is used as an adverb and as an adjective.)
downwind /daun'wind/ adjective, adverb in the same direction as the wind is blowing. Turn downwind to turn the aircraft so that it is flying in the same direction as the wind is blowing. Opposite upwind.
downwind leg /daun'wind leg/ noun part of the airfield traffic circuit which runs parallel to, but in the opposite direction to, the approach to land which is made into wind.

DR abbreviation dead reckoning.
draft /draft/ noun US same as draught.
drag /dræg/ noun the resistance of the air created by moving the aircraft through the air. To reduce the effect of drag on an aircraft by the fixed undercarriage a retractable type was introduced. If an engine failure occurs, the windmilling propeller may cause considerable drag.

COMMENT: There are two basic types of drag called parasite drag and induced drag. Parasite drag is caused by friction between the air and the aircraft surface, ailerons, landing gear, etc. Induced drag is produced by lift.

drain /dren/ noun a device to allow fluid to escape from its container. When the cabin is pressurised the drains close, preventing loss of pressure. To allow fluid to escape by providing a hole or tube, etc., through which it can pass. The moisture drains in the lower skin of the cabin are open when the cabin is unpressurised, allowing moisture to drain.

drainage /dren'ʤi/ noun 1. the act of allowing a fluid to escape from its container. Drainage of water from the fuel system should be carried out before the first flight of the day. 2. a system of outlets for fluid such as water or fuel to pass out of a closed area.
draught /draʊf/ noun a local current of air. A down draught or an updraught. (Note: This word is written draft in US English.)
draw /drɔ/ verb 1. to make a picture as with a pencil, on paper, etc. Because there is a temperature gradient across each front it is possible to draw isotherms which reduce in value from warm to cold air. 2. to pull or to take. Fluid is drawn into the pump body. 3. to pull towards oneself. (Note: drawing – drew – drawn)
drift /drɪft/ noun movement away from the desired course, created by wind blowing at an angle to the intended direction of flight. If the wind direction is not the same as the aircraft track or its reciprocal, then the aircraft will experience drift. To move away from the desired course. When landing, a cross-wind from the right will cause the aircraft to drift to the left.
drill /drɪl/ noun 1. a short series of actions carried out in a particular sequence. The starting drill varies between different aircraft types and a starting check procedure is normally used. 2. a tool, often electrically powered, for making holes in metal, wood, etc.
drive /draiv/ noun a series of connected devices that transmit power to the wheels, propellers, etc. Rotation of the engine for starting is done by an electric starter motor connected to a drive shaft in the accessories gearbox. To make something move or turn. Shaft-driven using a rotating shaft as a means of transmitting power from one part to another, e.g. from a turbine engine to a helicopter rotor.

Drainage of water from the moisture drains in the lower skin of the cabin are open when the cabin is unpressurised, allowing moisture to drain.
and guide ○ He's learning to drive. (NOTE: driving – drove – driven)
driven /drɪv(ə)n/ • drive

drizzle /ˈdrɪzl/ • noun precipitation, often persistent, in the form of very small drops of water ○ Drizzle is the lightest form of precipitation consisting of fine water droplets.

COMMENT: In weather reports and forecasts, drizzle is abbreviated to DZ.

drogue parachute /ˈdruɡ ˌpærəʃuər/ • noun a small parachute used in releasing a larger parachute from its pack

drone /draʊn/ • noun an aircraft whose flight is controlled from the ground
drop /drɒp/ • noun 1. a small amount of liquid that falls ○ a drop of water ○ a few drops of rain 2. a sudden lowering ○ The passage of a cold front is usually followed by a drop in temperature. ○ A sudden drop in oil pressure is normally an indication of serious engine trouble. ○ verb to become lower or to decrease suddenly ○ The temperature dropped by several degrees.
droplet /ˈdrɒplot/ • noun a small drop of liquid ○ Experiments show that smaller droplets of rain can remain super cooled to much lower temperatures than large droplets.
drove /draʊv/ • drive
drum /druːm/ • noun a cylindrical device, often with closed ends
dry /draɪ/ • adjective containing no water or no moisture ○ dry air ○ lapse rate
dry ice /ˈdraɪ ˈaɪs/ • noun solidified carbon dioxide
dual /ˈduːəl/ • adjective double, in pair ○ Most light aircraft with side-by-side seating have dual controls.
duct /dʌkt/ • noun a channel or tube through which fluids or cables can pass ○ The modern jet engine is basically a duct into which the necessary parts are fitted.
due /dju:/ • adjective 1. expected to arrive ○ the flight is due at 10 o'clock; the flight should arrive at 10 o'clock 2. ○ due to because of ○ Due to daytime heating, the stability decreases and the wind speed increases. ○ adverb exactly and directly ○ The aircraft flew due east.
dump /dʌmp/ verb to offload quickly ○ Normal operating cabin pressure can be reduced rapidly in the event of emergency landings, by dumping air. ○ The aircraft flew out to sea in order to dump fuel before landing.
duplication /djuˈplɪkeɪʃən/ • noun the act of copying or doubling ○ Control surfaces are divided into sections operated by a separate control unit, thus providing duplication to guard against failure of a unit.
durability /ˈdjuərəbɪləti/ • noun the ability of a substance or device to last a long time ○ High quality components have good durability.
duration /djuˈreɪʃən/ • noun the length of time for which something continues ○ The duration of the examination is two hours. ○ The duration of the flight was three hours.
dust /dʌst/ • noun a fine powdery substance blown by the wind and found on surfaces ○ Solid particles in the air include dust, sand, volcanic ash and atmospheric pollution.
duty /ˈdjʊtɪ/ • noun 1. a period of work ○ on duty at work ○ off duty not at work 2. same as import duty ○ the duty payable on a carton of cigarettes
dye /daɪ/ • noun a material used to change the colour of something ○ Minute surface cracks which are difficult to detect by visual means may be highlighted by using penetrant dyes.
dynamic /ˈdaiəmətɪk/ • adjective referring to something in motion ○ dynamic pressure pressure created by the forward movement of the aircraft ○ If the dynamic pressure increases due to an increase in forward speed, the force required to move the control column will increase. Opposite static pressure
dynamic seal /ˈdaiəmətɪk ˈsɪl/ • noun a seal which is part of a moving component, e.g. in a hydraulic system ○ Dynamic seals require lubrication to remain effective.

DZ /ˈdɛːz/ • abbreviation drizzle
E abbreviation east
ear /ɪə/ noun the hearing organ
ear defenders /ɪə dɪfəndəz/ plural noun same as acoustic ear muffs
eardrum /ɪə drʌm/ noun a membrane inside the ear which vibrates with sound and passes the vibrations to the inner ear. Equalisation of the air pressure across the eardrum is more difficult to achieve during descents than ascents.
ear muffs /ɪə mʌfs/ plural noun same as acoustic ear muffs
earth /ɜːθ/ noun 1. (the planet) Earth the planet where we live 2. ground or soil verb to connect an electrical appliance to a position of zero potential. When refuelling a light aircraft, ensure that the aircraft is properly earthed. (Note: The US expression is to ground.)
east /ɪst/ noun 1. a compass point on the mariner’s compass 90° clockwise from due north and directly opposite west. London is east of New York. 2. the direction in which the Earth rotates, the direction of the rising sun. adjective 1. referring to areas or regions lying in the east. the east coast of Canada. 2. the eastern part of a region. East Africa. adverb towards the east. The aircraft was flying east.
eastbound /ɪstˈbaʊnd/ adjective travelling towards the east. an eastbound flight
easterly /ɪstəli/ adjective 1. situated towards the east. a easterly component one part of the wind direction coming from the east.
eastward /ɪstwɔrd/ adverb towards the east. same as eastwards
eastwards /ɪstwɔdz/ adverb towards the east. Flying eastwards or westwards for long periods of time affects sleep patterns.
east wind /ɪst wɪnd/ noun a wind blowing from or coming from the east. (Note: A wind is named after the direction it comes from.)
EAT abbreviation expected approach time
EATMP abbreviation European air traffic management programme
ECAC abbreviation European civil aviation conference
ECAM abbreviation electronic centralised aircraft monitor
echo /ˈɛkəʊ/ noun 1. the repetition of a sound by reflection of sound waves from a surface. 2. the return of a signal back to the source from which it was transmitted. The strength of the returning echo from a radar transmission depends on a number of factors.
economic /ˌɪkəˈnɒmɪk/ adjective financially rewarding. It was no longer
economical /ˌɛkəˈnomɪkl/ adjective referring to a substance or device for which input is minimised and output maximised (thereby saving costs) • economical engine an engine which uses less fuel to produce the same power as comparable engines • Jet engines are more efficient and economical when operated at high altitudes.

ECS abbreviation environmental control system

eddy /ˈedɪ/ noun a current of air moving in the opposite direction to the main current, especially in a circular motion • When wind flows over an obstruction such as a building, an eddy is formed on the lee, or downwind side.

edge /ɛdʒ/ noun a line of intersection or joining of two surfaces

EET abbreviation estimated elapsed time

effect /ɪˈfekt/ noun 1. something which results from a cause • Ultra-violet radiation has the effect of warming the atmosphere. • Pressure patterns have an effect on weather. 2. the condition of being in full force • to take effect, to come into effect to start to operate • A new regulation comes into effect tomorrow. • with effect from starting from a verb to cause or carry out • to effect a change to make a change • modifications were effected modifications were carried out. Compare affect

effective /ɪˈfektɪv/ adjective 1. having an expected and satisfactory result • the new cleaning fluid was very effective it cleaned well 2. operative, in effect • The regulation is effective immediately.

effectiveness /ɪˈfektɪvnəs/ noun how well something works • Ice covering reduces the effectiveness of an aerial.

effective pitch /ɪˈfektɪv pɪtʃ/ noun the distance the aircraft moves forward in flight for one 360° rotation of the propeller
which is fired out of the aircraft while the crew-member is still in it.

**ejector** /ˈdʒektər/ noun 1. a device to throw something out forcefully 2. a device using a jet of water, air, or steam to withdraw a fluid or gas from a space o A jet transfer pump or fuel ejector is used to transfer fuel.

**elapse** /ɪˈlæps/ verb to pass o The radio altimeter works on the principle that, if the path followed by the radio wave is straight down and up, then the elapsed time between the outgoing and incoming signal is a function of the aircraft’s height.

**elastic** /ɪˈlæstɪk/ adjective flexible, easily returning to its original shape after being stretched or expanded o At low values of stress, if the plot of stress and strain is a straight line, this indicates that the material is elastic within this range.

**elasticity** /ɪˈlæstɪtsi/ noun the property of returning to an original form or state following deformation o Titanium falls between aluminium and stainless steel in terms of elasticity, density and elevated temperature strength.

**electric** /ɪˈlektrɪk/ adjective powered or worked by electricity

**electrical** /ɪˈlektrɪk(ə)l/ adjective 1. referring to electricity o an electrical fault 2. powered or worked by electricity o Activation may be mechanical or electrical.

**electric current** /ɪˌlektrɪk ˈkærənt/ noun the mass movement of electric charge in a conductor

**electricity** /ɪˌlektrɪstɪsɪtɪ/ noun an electric current used to provide light, heat, power

**electric power** /ɪˌlektrɪk ˈpauə/ noun electricity used to drive machines or devices

**electro-** /ɪˌlektrəʊ/ prefix electricity

**electrode** /ɪˌlektrəʊd/ noun a solid electrical conductor through which an electric current enters or leaves an electrolytic cell o A battery has a positive and a negative electrode.

**electrolyte** /ɪˌlektrələʊt/ noun a chemical compound that becomes conductive when dissolved or molten o The electrolyte in a lead-acid battery consists of sulphuric acid diluted with distilled water.

**electrolytic** /ɪˌlektrəlɪtɪk/ adjective o **electrolytic cell** a cell consisting of electrodes in an electrolyte solution

**electro-magnet** /ɪˌlektrəmæɡnɪt/ noun a magnet consisting of a coil of insulated wire wrapped around a soft iron core that is magnetised only when current flows through the wire

**electro-magnetism** /ɪˌlektrəmæɡnɪˈtɪz(ə)m/ noun a force exerted by a magnetic field found around any conductor carrying current, the strength of which will depend on the amount of current flow

**electromotive force** /ɪˌlektrəˈmɔttɪv ˈfɔːs/ noun a source of electrical energy required to produce an electric current, produced by devices such as batteries or generators and measured in volts. Abbreviation **emf**

**electron** /ɪˌlektrən/ noun a sub-atomic particle that has a negative electrical charge o Electrons in the outer orbits of an atom may not be strongly attracted to the nucleus and may be lost.

**electronic** /ɪˌlektrənɪk/ adjective referring to, based on, operated by, or involving the controlled conduction of electrons especially in a vacuum, gas, or semi-conducting material o Lightning does not often seriously damage aircraft but it may affect sensitive electronic equipment.

**electronic centralised aircraft monitor** /ˌɪlektrənɪk ˈsɛntəralɪzəd ˈɛskraʊt monɪtər/ noun a display on two cathode ray tubes giving pilots engine and systems information. Abbreviation **ECAM**

**electronic flight instrument system** /ˌɪlektrənɪk ˈflɪt ɪnstrəmənt ˈsɪstəm/ noun primary flight and navigation information on a cathode ray tube. Abbreviation **EFIS**

**COMMENT:** The electronic flight instrument system can show basic flight information and engine performance information, as well as moving maps and checklists.
element

1. a substance composed of atoms with an identical number of protons in each nucleus ♦ Elements cannot be reduced to simpler substances by normal chemical methods.

2. the resistance coil in an electrical device such as a heater

elevate

1. to move something to a higher place or position from a lower one; to lift ♦ In some light aircraft the magnetic compass is elevated to a position as far away from the interfering effect of other components as possible.

elevated

1. increased or raised temperature

elevation

the height at which something is above a point of reference such as the ground or sea level ♦ The highest point in a locality is marked by a dot with the elevation marked alongside.

aerodrome elevation distance in feet of the aerodrome above sea level ♦ Elevation is indicated on charts by means of contour lines, spot heights, etc.

elevator

1. a moveable control surface, usually attached to the horizontal stabiliser of an aircraft, used to produce the nose up/down motion of an aircraft in level flight known as pitch ♦ Elevators should be checked for full and free movement immediately prior to take-off.

2. US same as lift

COMMENT: Some aircraft have an all-moving tailplane called a ‘stabiliser’ (a combination of the words stabiliser and elevator).

eliminate

1. to get rid of or remove ♦ Air dryers are provided to eliminate the possibility of ice forming.

2. to eliminate the need for complex mechanical linkage, the selector is operated electrically.

3. to eliminate a danger to remove a danger

ellipse

1. an oval-shaped line ♦ Each planet moves in an ellipse and the sun is at one of the foci.

electrical

1. involving or produced by electricity ♦ Generator.

2. a temperature that is transferred by electricity ♦ A temperature probe is embedded into the stator of the generator.

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3. to eliminate a danger to remove a danger

eelliptical

1. having an oval shape ♦ the elliptical path of the Earth around the sun

ELR

1. environmental lapse rate

2. extra long range

embarkation

1. the act of going onto an aircraft ♦ Embarkation will start in ten minutes.

2. time the time at which passengers will be asked to go onto the aircraft

embed

1. to fix firmly in a surrounding mass ♦ A temperature probe is embedded into the stator of the generator.

2. to move something to a higher place or position from a lower one; to lift ♦ In some light aircraft the magnetic compass is elevated to a position as far away from the interfering effect of other components as possible.

elements

1. cannot be reduced to simpler substances by normal chemical methods.

2. cannot be reduced to simpler substances by normal chemical methods.

emergency

1. a serious situation that happens unexpectedly and demands immediate action ♦ to deal with or to handle an emergency

2. a landing made as a result of an in-flight emergency

COMMENT: Some aircraft have an all-moving tailplane called a ‘stabiliser’ (a combination of the words stabiliser and elevator).

eliminate

1. to get rid of or remove ♦ Air dryers are provided to eliminate the possibility of ice forming.

2. to eliminate the need for complex mechanical linkage, the selector is operated electrically.

3. to eliminate a danger to remove a danger

eelliptical

1. having an oval shape ♦ the elliptical path of the Earth around the sun

ELR

1. environmental lapse rate

2. extra long range

embarkation

1. the act of going onto an aircraft ♦ Embarkation will start in ten minutes.

2. time the time at which passengers will be asked to go onto the aircraft

embed

1. to fix firmly in a surrounding mass ♦ A temperature probe is embedded into the stator of the generator.

2. to move something to a higher place or position from a lower one; to lift ♦ In some light aircraft the magnetic compass is elevated to a position as far away from the interfering effect of other components as possible.

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radio emission ○ One factor on which the operational range of a radio emission depends is the transmitted power.

emit /ɪˈmɪt/ verb to send out e.g. matter, energy or radiation ○ radiation emitted by the sun ○ An X-ray tube emits radiation. ○ Latent heat is emitted when condensation takes place. (NOTE: emitting – emitted)

empennage /ɪmˈpɛndʒ/ noun the tail assembly of an aircraft ○ The empennage usually includes the fin, rudder, horizontal stabiliser (or tail-plane), and elevator.

emphasis /ˈemfəsɪs/ noun force of expression that gives importance to something ○ It is only in recent years that much emphasis has been placed on determining the causes of metal fatigue.

emphasise /ɪmˈfæsəz/, emphasize verb to give importance to something ○ On some maps, different elevations are emphasised by colouring.

employ /ɪmˈplɔɪ/ verb 1. to use ○ There are two methods employed to cool the cylinders down. ○ In some aircraft, particularly those employing nickel-cadmium batteries, temperature sensing devices are located within the batteries to provide a warning of high battery temperatures. 2. to give somebody regular paid work

empty weight /ˈempti wɛt/ the weight of a plane without fuel, people or freight

enable /ɪnˈeɪbl/ verb to make something possible or easier ○ Isolation valves are fitted to enable servicing and maintenance to be carried out.

enclose /ɪnˈkləʊz/ verb to surround on all sides ○ The housing encloses the various mechanical parts. ○ Fuses form a weak link in a circuit and are usually made of a strip of tinned copper enclosed in a glass tube.

encode /ɪnˈkəʊd/ verb to put into code ○ Weather information is encoded to allow large amounts of information to be given in a short space of time.

encounter /ɪnˈkaʊntə/ verb to meet something unexpected or unwanted ○ Severe icing can be encountered in wave cloud.

degree ○ The flight time to the PNR and back will equal the endurance of the aircraft.

energy /ˈendʒəri/ noun 1. the ability of a physical system to do work 2. power from electricity, petrol, heat, etc. ○ The engine converts heat energy into mechanical energy. ○ The generator converts mechanical energy into electrical energy.

engage /ɪnˈdʒɪndʒ/ verb 1. to switch on and use ○ The autopilot may be engaged during climb or descent. Opposite disengage 2. ○ engaged in working on a particular job or task ○ Personnel engaged in ground running must ensure that any detachable clothing is securely fastened and they should wear acoustic ear muffs.

engine /ˈendʒən/ noun a machine that converts energy into mechanical force or motion, different from an electric or hydraulic motor because of its use of a fuel ○ jet engine ○ piston engine ○ internal combustion engine ○ combustion, jet, piston ○ engine-driven referring to equipment and devices which take their power from the engine when it is running ○ engine-driven generator ○ engine-driven pump ○ engine running engine operating or working ○ the engine is running the engine is working ○ The accident investigation demonstrated that the engine was running at full power when the aircraft hit the ground.

COMMENT: In British usage, there is a clear distinction between the terms 'engine' and 'motor', the term 'motor' only being used for electric power units. In American usage, however, 'motor' is used for all types of power unit including the internal-combustion engine.

electric ○ engine block /ˈendʒən blok/ noun a cylinder block with integral crankcase
engine capacity

engine capacity /ˈendʒən kæpətəri/ noun the swept volume of an engine

engine compartment /ˈendʒən kəmpərtmənt/ noun a space in the airframe where the engine is located

engineer /ˈendʒən ɪnɡɪnɪər/ noun a person who is qualified to design, build and repair machines. An aircraft engineer is an engineer who specialises in the maintenance and repair of aircraft

engineering /ˈendʒən ɪnɡɪnіərɪŋ/ noun the use of scientific and mathematical principles for practical reasons such as the design, manufacture, and operation of machines and systems, etc.

aircraft engineering the branch of aviation concerned with the maintenance and repair of aircraft. Reinforced plastics or composites are being used in aircraft engineering instead of metals because they are much lighter.

engine failure /ˈendʒən feɪljuər/ noun a situation in which an engine stops during running

engine indicating and crew alerting system /ˈendʒən ɪndɪkeɪtɪŋ ənd kruː ə lɑːrtɪŋ ˈsɪstəm/ noun full form of EICAS

engine instruments /ˈendʒən ɪnstrəmənts/ plural noun instruments which give the pilot information about engine temperature, speed, etc.

engine intake /ˈendʒən ɪnˈtɛkt/ noun the front part of the engine where air enters the engine

engine malfunction /ˈendʒən ˈmærkənʃən/ noun a situation in which the engine does not work as it should

engine oil /ˈendʒən ˈɔɪl/ noun oil used especially to lubricate engines

engine performance /ˈendʒən ˈpɔːrəməns/ noun a description of how well the engine works or detailed statistical information about the capabilities of the engine

enhance /ˈenhaɪns/ verb to make greater or better or clearer - Chances of survival are enhanced if passengers know where the emergency exits are.

‘…any automation must be designed to enhance the decision making abilities of the crew, not replace them’ [INTER PILOT]

enhancement /ˈenhaɪnmənt/ noun the process of making greater, better or clearer - an enhancement of an image on a screen the improvement of an image on a screen

enlarge /ɪnˈlɑːrdʒ/ verb to make bigger or larger - enlarge the hole make the hole bigger

enplane /ɪnˈpleɪn/ verb to board or allow somebody to board an aircraft

en route /ˌen ˈruːt/ adverb, adjective on or along the way - en route from New York to London on the way from New York to London - en route alternate - enroute weather conditions a description of the weather along the path of flight

ensure /ɪnˈʃuər/ verb to make certain, to make sure - The generator cut-out ensures that the battery cannot discharge. Before the engine is stopped, it should normally be allowed to run for a short period at idling speed, to ensure gradual cooling.

enter /ˈentər/ 1. to come or go into - Enter at the front of the cabin and leaves at the rear. 2. to write down e.g. information - Enter the rectified airspeed in the log. 3. to put data into a computer, especially by using the keyboard to type it in - Enter the data into the computer

entire /ɪnˈtɪr/ adjective whole, having no part excluded or left out - the entire life of a thunderstorm the complete life of a thunderstorm

entry /ˈentri/ noun 1. the act or instance of going in - the flow of traffic at entry points to the airfield. 2. the writing in of an item, as in a record or log - An entry should be made in the technical log.

entry point /ˈentri ˈpɔɪnt/ noun a position on the ground above which an aircraft entering a control zone crosses the boundary

envelop /ɪnˈveləp/ verb to surround and cover - The atmosphere envelops the earth.
envelope /ɪnˈvɜːrənmənt/ noun 1. the set of limitations within which a technological system, especially an aircraft, can perform safely and effectively. The boundaries of flight envelopes vary between aircraft categories and performance groups but in each case, there is a speed which must not be exceeded which is called the Vne (never-exceed speed). 2. a cover. The atmosphere is the gaseous envelope surrounding the earth.

equation /ɪˈkwɪʒən/ noun a statement, usually in symbols, that two quantities or mathematical expressions are equal. The equation \( V_g = P \) can be used to find the geostrophic wind.

equator /ɪˈkwɔːtər/ noun the imaginary great circle around the Earth’s surface, equidistant from the poles and perpendicular to the Earth’s axis of rotation which divides the Earth into the northern hemisphere and the southern hemisphere. Every point on the equator is equidistant from the poles.

equatorial /ˌekwəˈtorɪəl/ adjective referring to the equator or to conditions that exist at the Earth’s equator.

equilibrium /ɪkˈwɪlbriəm/ noun a state of physical balance. When an aircraft is in unaccelerated straight and level flight at a constant speed, the forces of lift, thrust, weight and drag are in equilibrium.

equipment /ɪˈkwɪpmənt/ noun devices, systems, machines, etc., that are needed for a particular purpose. (Note: Equipment has no plural form; for one item say: a piece of equipment.)

equivalent /ɪkwɪvələnt/ adjective having the same purpose or value as something else. The function of a logic gate is equivalent to that of a switch.

equivalent shaft horsepower /ɪˌkwɪvələnt ʃɑ/lengthmarkft /ˈhɔrpɔʊər/ noun the unit used for stating the total power of a turboprop engine, consisting of the shaft horsepower of the engine plus the thrust from the engine. Abbreviation ESHP.
error

error /'erə/ noun 1. a mistake or incorrect calculation  o an error in somebody's work  o errors caused by location 2. the known inaccuracy of an instrument or system which has to be corrected by calculating the true value

escape /'eskeip/ noun the act of getting away from or out of a place after being held  o escape of fuel or oil unwanted loss of fuel or oil  o escape from danger getting to a safe place  o verb to get away from or out of after being held  o If there is a hole in the fuselage of a pressurised aircraft, air escapes from the cabin to the atmosphere.

escape hatch /'eskeip haʧ/ noun a small doorway only used in emergencies

escape route /'eskeip raут/ noun the passengers' way out of an aircraft after an emergency landing

escape slide /'eskeip slaid/ noun a device which allows passengers to exit the aircraft safely in an emergency, when no steps are available

ESHP abbreviation equivalent shaft horsepower

essential /'esensəl/ adjective absolutely necessary  o Teamwork within the crew is essential.  o A knowledge of the tropopause is essential.  o non-essential not necessary

EST abbreviation 1. Eastern Standard Time 2. estimate (ICAO) 3. estimated (ICAO)

establish /'estæblɪʃ/ verb 1. to be confirmed as stable in a particular flight condition, such as a flight level or glideslope, etc.  o Once established on the downwind leg, the pilot should perform the checks. 2. to work out or to calculate  o establish your position find out where you are 3. to position  o Low-power NDBs (Non-Directional Radio Beacons) are often established at the outer or middle marker sites. 4. to establish communication to make contact with  o to establish control to get control

estimate /'estɪmeit/ verb 1. to calculate approximately the cost, value or size of something  o I estimate that it will take about two hours for us to reach our destination.  o Cloud heights may be measured or estimated. 2. to form a judgement about  o to estimate the chances of something to weigh the possibilities and form an opinion

estimated take-off time /'estɪmeitd tə'keɪf/ noun the time when an aircraft is expected to take off. Abbreviation ETOT

estimated time of arrival /'estɪmeitd, təm ərəv(ʊ)l/ noun the time when an aircraft is expected to arrive. Abbreviation ETA

estimated time of departure /'estɪmeitd, təm ə di'pɜr(ʊ)l/ noun the time when an aircraft is expected to take off. Abbreviation ETD

estimation /'estɪmeɪʃ(ə)n/ noun 1. an approximate calculation  o an estimation of ground speed. Estimation of visibility is achieved by noting the distances at which lights of known candle power can be observed and relating these distances to visibility-by-day values. 2. an opinion  o in my estimation in my opinion

ETA abbreviation estimated time of arrival

ETD abbreviation estimated time of departure

ETOT abbreviation estimated take-off time

Eurocontrol /juərəʊkən, 'trəʊl/ noun the European organisation for the safety of air navigation. (NOTE: Eurocontrol operates the ATC centre at Maas- tricht in the Netherlands and the Central Flow Management Unit in Brussels.)

European Geostationary Navigation Overlay Service /juərəʊgeɪstəˈteɪʃ(ə)n(ə)riˌnævɪˈgeɪʃ(ə)n ˈəvɔrleɪ, ˈsəvəris/ noun full form of EGNOS

evacuate /'ɪvækjuət/ verb 1. to remove all the people from somewhere in the event of an emergency  o to evacuate all passengers from the airport 2. to empty somewhere of all people in it because of an emergency  o to evacuate the aircraft 3. to create a vacuum  o
 evacuate a glass jar
remove all the air from a glass jar

evacuation /ɪ.vəˈkeɪʃən/ noun
1. the act of removing all people from somewhere in the event of an emergency ○ The evacuation of the passengers from the airport was not ordered.
2. an act of emptying somewhere of all people in it because of an emergency ○ The evacuation of the aircraft did not take long. ○ evacuation command an evacuation order from the captain ○ ditching evacuation an evacuation after the aircraft has force-landed on water

evaluate /ɪˈvæljuːt/ verb to examine and judge carefully ○ Deposits of ice are detected and continuously evaluated to operate a warning system.

evaluation /ɪˌvæljuˈeɪʃən/ noun
the examination and judgement of something ○ The ice detector system provides continuous evaluation of conditions conducive to the formation of ice.

evaporate /ɪˈvapərət/ verb to convert or change a liquid into a vapour ○ In the heat of the day, water evaporates from the surface of the earth. Opposite condense

evaporation /ɪˌvæpərəˈeɪʃən/ noun
the changing of a liquid into vapour, vapourisation ○ Carburettor icing can be caused by the expansion of gases in the carburettor and the evaporation of liquid fuel.

even /ˈiːvn/ adjective
1. flat or smooth, with no bumps or dents 2. the same in all parts of an area or over a whole surface ○ an even distribution of passengers ○ an even application of paint 3. as even numbers exactly divisible by 2, e.g. 4, 6, 20 ○ adverb 1. yet more ○ It will be even higher than the new building. ○ even faster not just as fast as, but more 2. ○ even if whether or not ○ Stop at the holding point even if there are no other aircraft on the approach. ○ even though in spite of the fact that ○ He gained his private pilot’s licence even though he was 73 years old.

event /ˈeɪvnt/ noun a happening ○ The Paris air show is a major event. ○ in the event of if something should happen ○ Passengers should fasten their seat belts in the event of turbulence. ○ in the event of main pump failure if there should be a failure of the main pump ○ in the event of fire if there should be a fire

eventual /ɪˈventjuːl/ adjective
happening at an unspecified time in the future ○ Water in the fuel may lead to eventual engine stoppage.

eventually /ɪˈventjuːli/ adverb at an unspecified time in the future ○ Vapour cools and eventually condenses.

evidence /ˌevɪdəns/ noun an outward sign ○ external evidence of cracks something which can be seen on the surface which suggests that there is a deeper structural problem ○ Deformed wing panels may be evidence of an over-stressed airframe.

evident /ˈevɪdənt/ adjective obvious, easily seen or understood ○ It is evident from the information available that language problems played a part in the cause of the accident. ○ self-evident clear in itself, without further explanation

exact /ɪɡˈzækt/ adjective completely accurate or correct ○ The exact fuel flow and pressure is adjusted. ○ the calculation is not exact the calculation is not 100% correct

exactly /ɪɡˈzækli/ adverb
1. accurately, correctly ○ Measure the quantity exactly. ○ 2. absolutely, completely ○ A fuel injection system performs exactly the same function as a carburettor.

examination /ɪˌɡəzməˈneɪʃən/ noun
1. a set of questions or exercises testing knowledge or skill ○ The examination includes a flight plan. ○ 2. a medical examination medical check-up 3. a careful observation or inspection ○ the examination of a faulty component

‘...the pilot of a Grumman Cheetah refused to be breathalysed, and was taken to a police station for examination by a police surgeon, who confirmed that he had been drinking’ [Pilot]
examine /ɪɡˈzaɪmən/ verb 1. to find out how much knowledge or skill somebody possesses by means of questions or exercises. 2. to test or check the condition or health of somebody. 3. to study or analyse something. 4. to examine charts.

exceed /ɪkˈsid/ verb to be greater than. 1. Vertical velocity of updraughts can exceed 50 kt.

exception /ɪkˈsepʃən/ noun something or somebody not included. 1. an exception to the rule. 2. an exception in exceptional circumstances. 3. an exceptional pilot.

excess /ɪkˈses/ noun an amount or quantity beyond what is normal or sufficient. 1. excess power. 2. excess baggage. 3. excessive. 4. excessive use of power.

exhaust /ɪɡˈzɔt/ noun 1. the escape or release of vaporous waste material from an engine. 2. a pipe through which waste gases pass out of the engine. 3. the exhaust valve opens to allow for the exit of exhaust gases. 4. to use up all of something. 5. Supplies of fuel are exhausted.

exhibit /ɪɡˈzibət/ noun a system of pipes, silencers, etc., which carry exhaust gases from the engine to a point where they are released into the atmosphere.
exhibit  /ɪɡˈzɪbɪt/ verb to have or to display. Composites, due to their construction, exhibit good fatigue behaviour. Altocumulus are (usually) white layers or patches of cloud frequently exhibiting a waved appearance.

exist  /ɪɡˈzɪst/ verb to be present under particular circumstances or in a specified place. Water can exist in the atmosphere in three forms. A fire risk may exist following failure or leakage of any component.

existence  /ɪɡˈzɪstəns/ noun the fact or state of being. Warning systems are provided to give an indication of a possible failure or the existence of a dangerous condition.

exit  /ˈɛgzɪt/ noun 1. The act of going out of a place. The exhaust valve opens to allow for the exit of exhaust gases. exit velocity the velocity of exhaust gases from a jet engine. a way out

exit nozzle  /ˈɛksnəʊl/ noun a pipe or opening through which exhaust gases leave a jet engine.

exit point  /ˈɛkspɔɪnt/ noun a position on the ground above which an aircraft leaving a control zone crosses the boundary

expand  /ɛkˈspænd/ verb to increase in size, volume or quantity, to enlarge. Air expands when heated and contracts when cooled.

expansion  /ɛkˈspænʃən/ noun an increase in size, volume or quantity. There is an expansion of the gas when it is heated.

expansion chamber  /ɛkˈspænʃən ˈtʃɛmər/ noun a container which allows for expansion of a fluid caused by increase in temperature, etc.

expect  /ɪkˈspekt/ verb to hope or to assume that something is going to happen. the weather to be expected along a route. We expect flight AC 309 within ten minutes. as might be expected as people think would happen.

...by 1959 there were some 40 pilots past age 60 flying the line with the number expected to rise to 250 within the next few years. [INTER PILOT]

expected  /ɪkˈspektɪd/ adjective being thought or hoped to be taking place. the expected number of passengers.

expected approach time  /ɪkˈspɛktɪd əˈprəʊtʃ ˈtɪm/ the time at which air traffic control expects an arriving aircraft to complete its approach for landing, following a delay. Abbreviation EAT

expedite  /ɪkˈspɛdɪt/ verb to speed up the progress of. to expedite the evacuation to speed up the evacuation. to expedite the disembarkation to get the passengers off the aircraft quickly.

expel  /ɪkˈspɛl/ verb to force out, to drive out. Exhaust gases are expelled from the cylinder by the upward movement of the piston. The piston draws fluid into the cylinders on the outward stroke and expels fluid into the system on the inward stroke.

experience  /ɪkˈspɛriəns/ noun 1. the building up of knowledge or skill over a period of time by an active participation in events or activities. a pilot with 20 years’ experience. an event or incident. The first solo is an experience most pilots never forget. verb to undergo, participate in, find oneself in a particular situation. It is not unusual to experience traffic delays on the ground prior to departure. Turbulence can be experienced when flying through a trough.

experiment  noun /ɪkˈspɜrˌmɛnt/ a scientific test, carried out under controlled conditions, that is made to demonstrate or discover something. Experiments have shown that left-handed people often have better hand-eye coordination than right-handed people. to conduct an experiment to perform an experiment. to carry out a scientific test under controlled conditions in order to demonstrate or discover something.

experimental  /ɪkˌspɜrˈmɛnt(əl)/ adjective referring to something still at an early stage of development, not tried and tested. the experimental and testing stages of a new type of aircraft. an experimental aircraft an aircraft designed to be used for experimental...
explanatory
purposes ○ The experimental aircraft were used to investigate high-speed flight.

explanatory /ɪkˈspleɪnət(ə)r/ adjective referring to something which explains ○ explanatory paragraph a paragraph of text which explains something ○ self-explanatory something which does not need any further explanation

explosion /ɪkˈspleʊʒən/ noun 1. a release of energy in a sudden and often violent way ○ an explosion caused by a bomb 2. an act of bursting as a result of internal pressure ○ tyre explosion due to overheating 3. the loud sound made as a result of an explosion ○ The passengers heard an explosion.

explosive /ɪkˈsploʊsɪv/ adjective referring to something having the nature of an explosion ○ an explosive effect having the effect of an explosion ■ noun a substance, especially a prepared chemical, that explodes or causes explosions, e.g.Semtex

expose /ɪkˈspres/ verb to uncover something or leave something uncovered so that it is not protected from something such as rain or sunlight ○ When the slope of a hill is exposed to solar radiation, wind currents are set up. ○ exposed to the sun in sunlight without covering ○ exposed surface a surface without paint or covering of any sort

exposure /ɪkˈspraʊzən/ noun 1. the fact of being exposed, especially to severe weather or other forces of nature ○ After 24 hours in the sea, she was suffering from the effects of exposure and was taken to hospital. 2. the fact of being subjected to something ○ Exposure to radio-active substances may cause cancer.

express /ɪkˈspres/ verb to put into words, symbols or signs ○ Bearings may be expressed as true or relative. ○ An angle may be expressed in degrees, minutes and seconds. ○ Pressure altitudes are expressed in hundreds of feet.

extend /ɪkˈstend/ verb to stretch or spread from one point to another in space or time ○ Air from the Gulf of Mexico can extend into Canada. ○ Cumulonimbus clouds may extend to over 50,000 ft. ○ to extend the duration of something to prolong the time ○ The visit was extended to allow time for more discussions.

extensive /ɪkˈstentsɪv/ adjective large in range or amount ○ an extensive area a large area ○ extensive cloud a lot of cloud ○ extensive use is made of much use is made of

extent /ɪkˈstent/ noun a range or amount of something ○ The horizontal extent of the cloud averages about 50 km. ○ Clouds of great vertical extent are not uncommon. ○ to a certain extent, to some extent partly ○ The accident was caused, to a certain extent, by the poor weather. ○ to a lesser extent not as much as something previously stated ○ The cloud types which are most likely to affect flying conditions in terms of icing, precipitation and turbulence are cumulus, cumulonimbus and, to a lesser extent, nimbostratus.

external /ɪkˈstɜrn(ə)l/ adjective referring to, existing on, or connected with the outside or an outer part ○ The only external force acting on air is gravity. Opposite internal ○ external appearance the appearance of something from the outside

external ambient pressure /ɪkˌstɜrn(ə)l,əˈbɪrn,mənt/ pressure outside the aircraft

extinguish /ɪkˈstɪŋgwɪʃ/ verb to put out ○ The fire services extinguished the fire.

extinguisher /ɪkˈstɪŋgwɪʃər/ noun a portable mechanical device for spraying and putting out a fire with chemicals ○ Hand-operated fire extinguishers are provided to combat any outbreaks of fire in the flight crew compartment and passengers’ cabins.

extract noun /ˈekstrækt/ a part taken from a longer text ○ The following paragraph is an extract from a flight manual. ○ verb /ɪkˈstrækt/ 1. to obtain from a substance by chemical or mechanical action ○ A dehumidifier extracts moisture from the atmosphere. 2. to take out or to obtain information from some-
thing ○ Extract the important information from a text.

extrapolate /ɪkˈstræpəleɪt/ verb to estimate by using known facts ○ Information given on a synoptic chart can be extrapolated, by the use of some simple guidelines.

extreme /ɪkˈstrɪm/ adjective 1. most distant in any direction, the outermost or farthest ○ the most extreme point on the map 2. to the greatest or highest degree, very great ○ extreme care must be taken the greatest care must be taken ○ extreme difficulty great difficulty ○ noun either of the two things, values, situations, etc., situated at opposite ends of a range ○ the extremes of boiling and freezing ○ The region experiences extremes of temperature.

eye /aɪ/ noun an organ in the head which lets you see. ○ coordination, vision
symbol 1. Fahrenheit 2. farad

FAA abbreviation US Federal Aviation Administration

fabric /ˈfæbrɪk/ noun material or cloth produced especially by knitting or weaving. A breathing mask has a fabric carrying bag.

fabricate /ˈfæbrɪkeɪt/ verb to make or manufacture. Selected wing panels are fabricated entirely from magnesium alloys.

face /feɪs/ noun 1. the surface of an object. The face of the earth. 2. the front part with dial, indicators, etc. The face of an instrument. 3. the front of the head, including the eyes, nose, mouth. A full face smoke mask.

facilitate /ˈfæsɪlɪteɪt/ verb to enable something to happen more easily or quickly. A ramp is used to facilitate access to the wing. Clearly marked exits facilitate rapid evacuation of passengers.

facsimile /ˈfæksɪmɪl/ noun same as fax

fact /fækt/ noun information presented as real. Temperature changes are an important fact in meteorology.

in (point of) fact in reality, in truth

factor /ˈfæktər/ noun 1. an important part of a result, a process, etc. Visibility remains a very important factor in aviation. 2. by a factor of quantity by which a stated quantity is multiplied or divided, so as to indicate an increase or decrease in a measurement. By a factor of ten times. The rate is increased by a factor of 10. A conversion factor a formula or figure used for conversion of temperatures, distances, etc., from one system to another. The conversion factor for converting UK gallons to litres is: x 4.546.
fade /feɪd/ noun 1. a periodic reduction in the received strength of a radio transmission. ○ Surface wave at night causes fade of the signal. 2. a periodic reduction in braking power. ○ Hard braking can cause fade and tyre burst through overheating. ■ verb to lose strength, brightness, loudness, or brilliance gradually. ○ the lights faded, the lights dimmed. ○ the radio signal faded, the radio signal became weaker and weaker.

Fahrenheit /ˈfeɪrənhaɪt/ noun a scale of temperatures where the freezing and boiling points of water are 32° and 212° respectively. Compare Celsius. centigrade (note: used in the USA but now less common in the UK; usually written as an F after the degree sign: 32° F).

fall /fɔll/ verb 1. to stop working properly. ○ the brakes failed. the brakes did not work. ○ the wing failed during a high-speed turn. the wing broke during a high-speed turn. 2. to receive an academic grade below the acceptable minimum in an examination or a course of study. ○ the trainee failed his navigation examination. the trainee did not pass her navigation exam. ○ without fail, certainly. definitely. ○ Be here at 8 o’clock without fail.

fail safe /feɪl ˈseɪf/ noun the principle of designing a structure so that the failure of one part does not affect the safety of the whole.

fail safe system /ˈfeɪl ˌseɪf ˌsɪstəm/ noun a system or device which has in-built safeguards against total failure. ○ The term fail safe means that the structure, though damaged, is capable of supporting a reasonable percentage of its design load.

failure /ˈfeɪljuər/ noun 1. a stoppage or a breakdown. ○ bearing failure. ○ Engine failure is sometimes accompanied by fire. ○ power failure. loss of engine power, or loss of electrical power supply. 2. the fact of not achieving the desired goal or result. ○ the failure of an experiment. ○ failure to do something. not doing something. ○ The steward’s failure to remain at his station made the emergency situation worse. 3. the fact of not passing a course, a test, or an examination. ○ His failure in the GFT (General Flying Test) meant that he didn’t finish the course.

fair /feər/ adjective 1. free of clouds or storms, clear and sunny. ○ a fair weather good weather. 2. just, reasonable, free of favouritism or bias. ○ a fair exam. an exam which tested students on what they had been taught, was of reasonable difficulty and duration and which did not trick the candidates. ○ it is fair to say that he should have done better. it is reasonable to say that he should have done better. ■ verb to join pieces so as to be smooth, even, or regular. ○ The aircraft’s wing is faired into the fuselage.

failing /ˈfeɪlɪŋ/ noun a device to improve the flow of air over a surface. ○ There is a dorsal fairing at the base of the fin or vertical stabiliser. ○ Wheel fairings, called spats, are fitted to light aircraft to reduce drag. ○ spat, nacelle.

fairly /ˈfeɪlɪ/ adverb moderately, rather, quite. ○ fairly high levels. moderately high levels. ○ fairly simple. moderately simple.

fall /fɔl/ noun 1. a drop or lessening in amount. ○ fall in pressure. a drop in pressure. 2. the amount of rain or snow which comes down at any one time. ○ an overnight fall of snow. 3. US autumn. ○ verb 1. to become less in amount. ○ atmospheric pressure is falling. atmospheric pressure is decreasing. 2. to be included within the range of something. ○ Aircraft fall into a number of type categories. ○ Design methods fall into four groups. ○ Long-range high-frequency communications fall in the frequency bracket 2–25 MHz. 3. to drop or come down freely because of gravity. ○ Light rain may fall occasionally. 4. to occur at a particular time. ○ New Year’s Day falls on a Thursday this year. (note: falling – fell – fallen).

false /feɪls/ adjective not true, incorrect. ○ Lightning may cause false readings from sensitive instruments. ○ false glide path information. incorrect glide path information.
familiar /ˈfæməlɪər/ adjective 1. often seen, common ○ Clouds are the most familiar visible meteorological feature. 2. known ○ Symbols and abbreviations which are strange at present become familiar after a time. ○ to be familiar with to have some knowledge of something ○ He is familiar with the procedure.
familiarise /ˌfæməˈlaɪərɪzə/, familiarize verb ○ to familiarise yourself with to get to know something well
fan /fæn/ noun a circular device with rotating blades, powered by an engine or motor, for moving a gas such as air ○ The compressor has large rotating fan blades and stator blades.
fanjet /ˈfænˌdʒet/ noun US same as turbofan
FANS abbreviation future air navigation systems
FAR abbreviation US Federal Aviation Regulation
farad /ˈfærəd/ noun the SI unit of capacitance. Symbol F
fasten /fæstən/ verb to secure or to close, as by fixing firmly in place ○ fasten your seat belt put on and attach your seat belt ○ If in-flight conditions require the captain to activate the fasten seat belt sign, all cabin service ceases and cabin crew take up their assigned seats and strap in.
fatigue /fætɪdʒ/ noun 1. physical or mental tiredness resulting from exertion ○ Pilot fatigue was a contributing factor in the accident. 2. the weakening or failure of a material such as metal, resulting from stress ○ Fan blades must be resistant to fatigue and thermal shock. ○ Titanium has good fatigue resistance. ○ fatigue crack crack due to material fatigue
fault /fɔːlt/ noun a defect in a circuit or wiring caused by bad connections, etc. ○ A fault in the automatic boost control unit was repaired.
faulty /fɔːlti/ adjective containing a fault or defect, imperfect ○ The faulty component was replaced.
fax /fæks/ noun 1. an exact copy of a document, drawing, etc., transmitted and received by a fax machine connected to a telephone link 2. an electronic apparatus linked to a telephone used to send and receive a fax ○ Charts are transmitted by fax to meteorological offices. ○ CAMFAX • verb to send a fax ○ Charts are faxed to meteorological offices.
FDPS abbreviation flight data processing system
FDR abbreviation flight data recorder
FDS abbreviation flight director system
feather /ˈfɛðər/ verb ○ to feather a propeller to turn the blades of a stopped propeller edge on to the airflow in order to reduce drag or wind resistance ○ The feathered position not only reduces drag, but also minimises engine rotation, thus preventing any additional damage to the engine.
feathering /ˈfɛðərɪŋ/ noun the act of turning the blades of a stopped propeller edge on to the airflow in order to reduce drag ○ Feathering is accomplished by moving the pilot’s control lever.
feathering gate /ˈfɛðərɪŋ ɡeɪt/ noun a device on the propeller pitch control to prevent unwanted selection of the feathering position
feathering position /ˈfɛðərɪŋ ˈpozɪʃn/ noun a position of the propeller pitch control in which the blades are feathered
feature /ˈfeɪtʃər/ noun 1. an important, noticeable or distinctive aspect, quality, or characteristic ○ Sea breeze is a regular feature of coastal climates. 2. ○ ground features noticeable, important objects in the landscape which are useful aids to navigation, e.g. bridges, rivers, railway lines, etc. ○ verb to have as a particular characteristic ○ Many Rutan designs feature a canard wing.
Federal Aviation Administration /ˈfɛdərəl əˈviːʃən əˌmænɪˈgeɪʃən/ the body responsible for the regulation of aviation in the United States ○ The FAA issues licenses. Abbreviation FAA
Federal Aviation Regulation /ˈfɛdərəl əˌviːʃən əˈrejʃən/
feedback /ˈfɪdbæk/ noun 1. the return part of the output of a process or system to the input, especially when used to maintain performance or to control a system. The LC ensures that a feedback signal of the monitored output frequency is sent back to the CSDU. 2. a feedback mechanism

fighter /ˈfɪtʃər/ noun small, single-seat or two-seat aircraft for use in military conflict. The F16 is an American-built fighter.

fuel filter /ˈfjuːəl ˈfɪltə/ noun 2. an electric, electronic, acoustic, or optical device used to reject signals, vibrations, or radiations of particular frequencies while passing others. The tuner is a band pass filter which confines the bandwidth passed to the receiver to that required. A verb to pass a liquid or gas through a filter in order to remove unwanted substances. Fuel is filtered before entering the carburetor.

filter cartridge /ˈfɪltr ˌkartrɪdʒ/ noun same as filter element

filter element /ˈfɪltər ˈeləmənt/ noun a removable paper or metal component in a filter housing which must be replaced periodically. From time to time the filter element must be removed and cleaned or replaced. Also called filter cartridge

final /ˈfɜːnl/ noun the end part of a series or process. A verb coming at the end of a series or process. The F16 is an American-built fighter.

fine /fain/ adjective 1. of superior quality, skill, or appearance. A fine day a day when the weather is good. A fine weather good weather. A very small in size, thickness or weight. Cirrus cloud has a fine, hair-like appearance. A fine powder powder consisting of very small particles. A fine spray a spray consisting of very small drops of liquid. A fine wire very thin wire referring to the pitch or blade angle setting of the

field /fiːld/ noun 1. an area of grass on farmland, in the countryside. In the event of a power failure, it is important to select the most suitable field for a forced landing. 2. an imaginary area consisting of any combination of points or lines, e.g. a triangle

filter /ˈfɪltər/ noun 1. a material or device through which a liquid or a gas is passed in order to separate the fluid from solid matter or to remove unwanted substances. Filter 2. an electrical element made of gold film is sandwiched between the layers of glass. 2. a thin covering or coating. There is a film of oil between the piston and cylinder wall.
propeller. 1. Fine pitch enables full engine speed to be used on take-off and cruise pitch allows an economical engine speed to be used for cruising.

**FIR**

ighted information region

fire /faiə/ noun an area of burning or To guard against the risk of fire, passengers are requested not to smoke in the toilets. 1. an engine fire a fire in an engine. verb to shoot a gun, or to launch something such as a flare or a rocket.

fire deluge system /ˌfərˌdɛlˈdʒuː/ noun a system which extinguishes fire by spraying large quantities of water on it. A lever actuates the fire deluge system.

fire detection system /ˌfərˈdiʃn/ noun a system to detect the presence of fire in an aircraft.

fire extinguisher /ˈfɪr ɪkʃən/ noun a portable device full of foam, water, powder, etc., for putting out fires.

fireproof /ˈfaiəpruːf/ adjective designed to resist the effect of fire. A fireproof bulkhead is provided to separate the cool area of the engine from the hot area.

fire triangle /ˈfaiə trəɪəngɡəl/ noun the illustration of the chemistry of fire as the three sides of a triangle representing fuel, oxygen and heat. 1. If fuel, oxygen or heat is removed from the fire triangle, combustion will cease.

first aid kit /ˈfɜːrst ˈeɪdˌkiːt/ noun a small pack containing plasters, bandages, antiseptic cream, etc., to be used in case of an emergency.

first officer /ˈfɜːrst ˈɒfɪsə/ noun the officer who is second-in-command to the captain of an aircraft.

**FIS**

ighted information service

flight /flɪt/ verb to move the tail of an aircraft from side to side as a way of reducing speed.

**FISO**

ighted information service operator

fit /fɪt/ adjective in good physical condition, healthy. verb Keep fit with diet and exercise. noun the exactness with which surfaces are adjusted to each other in a machine. There should be a close fit between the cylinder and the piston, the difference being taken up by the piston rings.

fitment /ˈfɪtment/ noun an act of attaching or fixing. Attachment points are supplied for the fitment of heavy equipment.

**fitness** /ˈfɪtnəs/ noun the state or condition of being physically fit, especially as the result of exercise and proper eating habits. The age and physical fitness of some passengers can be a limiting factor in an evacuation.

fitness to fly description of the physical or mental capabilities a person needs to fly an aircraft.

fixed-wing /fɪkst ˈwʊŋ/ adjective referring to an aircraft that has wings that do not move, rather than rotor blades.

**FL**

ighted information level

flag /flæɡ/ noun 1. a usually square or rectangular piece of cloth with a symbolic design or colour. Flags are flown from the signal mast. 2. a small visual warning or indicating device on the face of an instrument. There is a warning flag on the instrument if there is a problem.

flame /fləm/ noun the usually yellow area of burning gases seen when something is burning. Flames were seen coming from number 2 engine.

flame arrester /ˈflæm ərˈɛstər/ noun a device to prevent flame from an external source from entering a fuel tank.

flame out /ˈflæm əʊt/ verb to cease from some cause other than the shutting off of fuel. Air in the fuel line can cause an engine to flame out or stop.

flame-out /ˈflæm aʊt/ noun the ceasing of combustion in a gas turbine engine from some other cause than the shutting off of fuel. (Note: The word is also written flameout.)
flammable /ˈflæməbəl/ adjective easily ignited and capable of burning fiercely and rapidly, and therefore hazardous. Aviation gasoline is a flammable liquid. (Note: Flammable and inflammable mean the same thing.)

flange /flændʒ/ noun the outside edge or rim of a part such as a beam or wheel. The web connects the upper and lower flanges of a beam.

flap /flæp/ noun a movable control surface on the trailing edge of an aircraft wing, used primarily to increase lift and drag during final approach and landing. Flaps should be retracted immediately after landing to decrease lift and therefore increase brake effectiveness.

NOTE: Flaps are not usually used for take-offs in light aircraft except when a short take-off run is required. Flaps are not primary control surfaces of an aircraft.

flare /flɛr/ noun 1. a stage of the flight immediately before touchdown when the nose of the aircraft is raised into the air. The approach, flare, and landing can be carried out by automatic systems. 2. a small rocket-like device with a bright light, for attracting attention.

flash /flæʃ/ noun giving off light in sudden or periodic bursts. Lightning is accompanied by a brilliant flash. Loss of vision may occur due to lightning flashes especially at night.

fly /flai/ verb to make flat. As altitude increases, the countryside appears to flatten out. The Earth is spherical in shape but it is flattened at the poles.

flaw /flɔː/ noun an imperfection in a material, often hidden, that may be an indication of future structural failure.

flaw detection a process or system by which small weaknesses in metal structures are found.

flat /flæt/ adjective 1. having a horizontal surface without a slope, tilt or curvature. It has been shown that the flat chart misrepresents the globe-shaped earth. 2. flat country country with no hills or mountains. 3. having no air inside. The flat tyre had to be changed because it had a puncture. 4. electrically discharged or with no electrical charge left in it. 5. The engine wouldn’t start because the battery was flat.

flat spin /ˈflæt ˈspɪn/ noun a descent in small circles by an aircraft flying in a nearly horizontal position.

flat spin/flare/flat out verb to make flat. As altitude increases, the countryside appears to flatten out. The Earth is spherical in shape but it is flattened at the poles.

flight /flaiθ/ noun 1. the pilot of an aircraft. 2. a passenger on an aircraft.

flight attendant /ˈfleɪt əˈtɛndənt/ noun a member of the flight crew who looks after passengers, serves food, etc.

If you need something, press the call button and a cabin attendant will...
flight bag

Respond within a few minutes. Also called cabin attendant

flight bag /ˈflaɪt bæg/ noun a bag used by flight crew to carry manuals, documents, headset, etc.

flight-briefing room /ˈflaɪt brɪfɪŋ rʊm/ noun a room where instructors talk to trainees immediately before a training flight or where a pilot talks to his or her crew immediately before boarding the aircraft

flight crew /ˈflaɪt kruː/ noun airline staff responsible for flying the aircraft

flight data recorder /ˈflaɪt ,dɛktaɪrɪkə/ noun an electronic device located in the tail section of an aircraft that picks up and stores data about a flight. Abbreviation FDR. Also called black box (NOTE: It is often called the black box, although it is not black.)

flight deck /ˈflaɪt dɛk/ noun a place where the flight crew of an airliner sit while flying the aircraft

flight deck instruments plural noun instruments used by the flight crew when flying an aircraft

flight engineer /ˈflaɪt ,ɪndʒɪnɪər/ noun the member of the crew of a plane who is responsible for checking that its systems, including the engines, perform properly

flight envelope /ˈflaɪt ,envələʊp/ noun same as envelope

flight information region /ˌflaɪt ,ɪnˈfərəmʃən rɪˈZEɪn/ noun airspace with defined limits which has an air traffic control information and alerting service. Abbreviation FIR

flight level /ˈflaɪt ,lɛvəl/ noun 1. the level of constant atmospheric pressure related to a reference datum of 1013.25 mb or FL 250 = 25,900 ft. Abbreviation FL 2, the height at which a particular aircraft is allowed to fly at a particular time

flight line /ˈflaɪt lain/ noun the area of an airfield, especially a military airfield, where aircraft are parked, serviced, and loaded or unloaded

Flight Manual /ˈflaɪt ,mænjuːbɔ/ noun same as Pilot’s Operating Handbook

flight operations /ˈflaɪt ,ɒpərəˈteɪʃənz/ plural noun the use of aircraft

flight path /ˈflaɪt pɑθ/ noun a line, course or track along which an aircraft flies

flight plan /ˈflaɪt plæn/ noun a written statement that gives details of the flight that a pilot intends to make

flight progress strip /ˈflaɪt ,prəˈgres strɪp/ a thin cardboard strip with information on it about a flight, which is updated by air traffic controllers as the flight progresses

flight simulator /ˈflaɪt ,sɪmjʊlətə/ noun a device or computer program which allows a user to pilot an aircraft, showing a realistic control panel and moving scenes, used as training programme

flight-test /ˈflaɪt test/ verb to test the performance of an aircraft or component in flight

float /ˈfləʊt/ noun 1. a floating ball attached to a lever to regulate the level of a liquid in a tank, etc. • float-operated switch a shut-off valve operated by a float 2. a hollow structure fixed below an aircraft that allows it to float on water. Also called pontoon • verb to remain on the surface of a fluid without sinking • Because of the air-tight nature of the fuselage, most large aircraft will float for some time before sinking

float chamber /ˈflaʊt ,tʃɛmbə/ noun the part of a carburettor which houses the float

floatplane /ˈfloʊtpleɪn/ noun a sea-plane that has hollow structures attached underneath its wings and sometimes its fuselage on which it floats so that the main body of the plane is not in contact with the water. Compare flying boat

flow /ˈfləʊ/ verb 1. to move or run smoothly with continuity, as a fluid • Air flows over the wing surfaces and lift is produced. 2. to circulate • Liquid coolant flows around the engine • noun continuous movement in a particular direction • The flow of fuel from the fuel tanks to the engines.
flowmeter noun a device for measuring the flow of a liquid or gas. The oxygen flowmeter should blink once for each breath.

fluorescent /fluzərɛnt/ adjective referring to the emission of electromagnetic radiation of visible light. The fluorescent penetrant process of flaw detection uses a penetrant containing a fluorescent dye which fluoresces in ultra-violet light.

fly /flaɪ/ verb to move through the air or to cause an aircraft to move through the air in a controlled manner. An airplane may not fly over a city below such a height as would allow it to alight in the event of an engine failure. He’s learning to fly. (NOTE: flying – flew – flown) to fly in formation to fly as a group which maintains a particular pattern or arrangement in the air.

fly-by-wire /flaɪ baɪ waiə/ noun technology which interprets movements of the pilot’s controls and, with the help of computerised electronics, moves the control surfaces accordingly. Using fly-by-wire technology, the stalling angle cannot be exceeded regardless of stick input. The more reliable and quick fly-by-wire system allows a much greater degree of flexibility with aircraft stability.

COMMENT: Fighters like the General Dynamics F16 and large transport aircraft such as the Boeing 777 and Airbus A320 have fly-by-wire systems.

flying /ˈflaɪɪŋ/ noun the act of making an aircraft move through the air in a controlled manner.

flying boat /ˈflaɪɪŋ bɔːt/ noun a seaplane with a body that acts like a boat’s hull and allows the plane to float on water. Compare floatplane.

flying conditions /ˈflaɪɪŋ kən dərənts/ plural noun the weather and its suitability for flying.

flying field /ˈflaɪɪŋ fɪld/ noun a small airfield from which light aircraft can operate.

flying instructor /ˈflaɪɪŋ ɪnˈstrʌktər/ noun a trained person, a pilot, who teaches people how to fly an aircraft.

flying-past /ˈflaɪ pɑs/ noun the flight of an aircraft or group of aircraft over a place as a spectacle for people on the ground.

FMS /ˈɛf em ˈɛs/ abbreviation flight management system.

foam /fɔːm/ noun 1. a mass of bubbles of air or gas in a liquid film. Foam fire extinguishers covered the fuselage with foam to control the fire. 2. any of various light, porous, semi-rigid or spongy materials used for thermal insulation or shock absorption. Polyurethane foam is used in packaging.

focal point /ˈfɔːskəl pɔɪnt/ noun same as focus.

focus /ˈfɔːskəs/ noun the point at which rays of light or other radiation converge. The focus of a lens is also called the focal point. (NOTE: The plural form is foci. /ˈfɔːsai/.) to come into focus to become clearer as through the viewfinder of a camera.

fog /fɔɡ/ noun condensed water vapour in cloud-like masses lying close to the ground and limiting visibility.
When visibility is less than 1,000 m owing to suspended water droplets in the atmosphere, the condition is known as fog. Evaporation fog steam fog Evaporation fog is usually confined to water surfaces and adjacent areas of land.

A warm dry wind that blows down the lee side of a mountain, particularly in the Alps (NOTE: The word is also written foehn.)

Same as aerofoil

A unit of length in the US and British Imperial Systems equal to 12 inches or 30.48 centimetres. Symbol ft (NOTE: The plural form is feet; foot is usually written ft or ″ after figures: 10′ or 10″.)

The ability to lift a one pound weight a distance of one foot. Abbreviation ft-lb

The capacity to do work or cause physical change the force of an explosion. Power used against a resistance. In small aerobatic aircraft, considerable force is needed on the control column when performing high-speed manoeuvres. A vector quantity that produces an acceleration of a body in the direction of its application. (NOTE: We say centrifugal force, but the force of gravity the natural force of attraction which pulls bodies towards each other and which pulls objects on Earth towards its centre [verb 1] to use power against resistance. Because of distortion to the airframe, the pilot had to force the door open in order to exit the aircraft. To force someone to do something to use physical or psychological power to make somebody do something they otherwise would not do. The hijackers forced the crew to fly to Athens.

An unexpected landing that a pilot of an aircraft has to make because of an emergency situation.

To force an aircraft to land, usually because of an emergency situation

A statement of what is likely to happen in the future or describing expected events or conditions. Weather forecast weather charts charts with information about the weather coming to a particular area. To estimate or calculate weather conditions by studying meteorological information. Rain is forecast for this afternoon. (NOTE: forecasting – forecast or forecasted)

A document with blanks for the insertion of details or information. An insurance form. An application form. A kind or type of The ground automatic relief valve is a form of discharge valve. Drizzle is the lightest form of precipitation. The shape of an object Fluids take on the form of the container in which they are found. In the form of a triangle in the shape of a triangle. The way in which a thing exists, acts, or shows itself. Water in the form of ice. Fuel in the form of a spray. A cumulus cloud is only form in an unstable atmosphere. To make a shape. Three points on the chart form a triangle. To make up or constitute.
classroom and accommodation building form the main part of the college.

formation /fə'meɪʃən/ noun 1. the process of coming into being or forming © cloud formation the natural production and development of clouds © ice formation the natural production and development of ice 2. © to fly in formation to fly in a group which maintains a particular pattern or arrangement in the air

former /'fɔːmər/ adjective having been in the past © a former military pilot a pilot who used to be a military pilot © noun 1. the first of two things mentioned 2. a light secondary structure of the airframe which gives improved shape

...much has changed in the former Eastern European States, especially in terms of aviation operations and training' [Civil Aviation Training]

formula /fə'mjuːlə/ noun a mathematical rule expressed in symbols © The formula for calculating speed is \( D \div T = S \) (where \( D \) = distance, \( T \) = time and \( S \) = speed). (Note: The plural form is formulae or formulae.)

forward /'fɔːwəd/ adjective at, near, or belonging to the front © the forward section of the aircraft © forward and aft exits

forwards /'fɔːwədʒ/ adverb towards a position in front © The throttles are moved forwards for take-off. (Note: The US English is forward.)

fouling /'faʊlɪŋ/ noun contamination of the spark plugs with oil or petrol so that they do not fire correctly © The engine should be run at a positive idling speed to prevent spark plug fouling.

four-digit group /'fɔːr dɪdʒɪt 'grʊp/ noun four single numbers found together

four-stroke combustion engine /'fɔːr strəʊk kəm'breɪʃən ,endʒɪn/ noun an engine which operates in accordance with the four-stroke cycle © Induction, compression, power and exhaust are the four phases of the four-stroke combustion engine.

fpm abbreviation feet per minute

FPPS abbreviation flight plan processing system

frame /freɪm/ noun 1. a structure that gives shape or support © Early aircraft fuselages were made of a frame covered by a fabric. 2. an open structure for holding, or bordering © a door or window frame

FREDA mnemonic freeze /friːz/ verb to pass from the liquid to the solid state by loss of heat © In some conditions, rain droplets freeze rapidly on striking the aircraft. (Note: freezing – froze – frozen)

freight /freɪt/ noun anything other than people transported by a vessel or vehicle, especially by a commercial carrier © Freight holds are usually located beneath the passenger cabins.

freighter /'frestər/ noun an aircraft designed to carry freight

frequency /'friːkwənsi/ noun 1. the number of times or the rate at which something happens in a given period of time © The frequency of flights to holiday destinations increases during the summer time. 2. the number of repetitions per unit time of a complete waveform, as of an electric current frequency © '...a Baltimore man adjusted a baby alarm to improve its performance and found his youngster's squawks were being picked up by incoming aircraft tuned to the local NDB frequency' [Pilot]

frequency bracket /'friːkwənsi ˈbreɪkt/ noun a range of frequencies © VHF communications are allocated the frequency bracket 118–137 MHz.

frequent /'friːkwənt/ adjective happening or appearing often © frequent inspection

friction /'friːkʃən/ noun a force that resists the relative motion or tendency to such motion of two bodies in contact © Energy is converted to heat through friction.

front /frent/ noun 1. the forward part or surface © The entrance is at the front. 2. the area, location, or position directly before or ahead © in front in a forward position relative to something else © Row 23 is in front of row 24. 3. the
mixed area between air masses of different temperatures or densities

**frontal** /ˈfrɑːnt(ə)l/ adjective 1. referring to the forward part or surface area of something *the frontal area* 2. the boundary between two air masses, or relating to a meteorological weather front - *a frontal storm*

**frontal depression** /ˈfrɑːnt(ə)l dɪˈpresʃən/ noun 1. a series of rain-bearing changes in the weather 2. **Frost** /frost/ noun a deposit of very small ice crystals formed when water vapour condenses at a temperature below freezing - *Frost had to be cleared from training aircraft which had been parked outside overnight.*

**ft** /fʊt/ abbreviation foot

**fuel** /ˈfjuːəl/ noun 1. a substance such as gas, oil, petrol, etc., which is burnt to produce heat or power - *Each wing tank holds 20 gallons of fuel.* 2. a fuel system includes tanks, fuel lines, fuel pumps, fuel filters and a carburettor or fuel injection system.

**fuel/air mixture** /ˈfjuːəl ˈɛərɪərɪˈmɪks/ noun a combination of fuel and air which is ignited in a piston engine to provide power - *COMMENT: Aircraft engines operate at different altitudes and the pilot must adjust the mixture to produce the most efficient fuel/air mixture for the atmospheric density.*

**fuel gauge** /ˈfjuːəl ɡeɪdʒ/ noun an instrument indicating fuel contents

**fuel injection** /ˈfjuːəl ɪnˈdʒɛkʃən/ noun system in which fuel is sprayed under pressure into the combustion chamber of an engine

**fuel injector** /ˈfjuːəl ɪnˈdʒɛktaʃən/ noun an injector that sprays fuel into the combustion chamber of an engine

**fuel pump** /ˈfjuːəl pʌmp/ noun a device which moves fuel along pipes from the tanks to the engine

**fumes** /ˈfjuːmz/ plural noun smoke, gas or vapour given off by a substance, often unpleasant or harmful - *When the cabin is rapidly and completely filled by smoke and fumes, passengers will suffer from disorientation.*

**function** /ˈfʌŋkʃən/ noun 1. a specific occupation or role - *Rota planning is one of the functions of the chief instructor.* 2. purpose - *Seals perform a very important function in a hydraulic system.* 3. **function** /ˈfʌŋkʃən/ verb 1. to act as, or to serve the purpose of - *The escape slide also functions as a life raft.* 2. to operate or to work - *The system functions well.*

**fundamental** /ˈfʌndəmənt(ə)l/ adjective 1. of or relating to the foundation or base - *The fundamental laws of aerodynamics.* 2. central, forming or serving as an essential component of a system or structure - *Electricity is one of the fundamental types of energy that exist in nature.*

**fungal growth** /ˈfʌŋɡəl ˈgraʊθ/ noun a type of organism which lives and multiplies in particular fuels - *Fuel contains chemicals for the inhibition of fungal growth.*

**fuse** /ˈfjuːz/ noun a safety device that protects an electrical circuit from an excessive current - *Circuit breakers perform the same function as a fuse.*

**fuselage** /ˈfjuːzəlɪdʒ/ noun the central body of a plane, to which the wings and tail assembly are attached and which accommodates the crew, passengers, and cargo - *The fire started in the wing but soon spread to the fuselage.*
G

g /[dʒiː]/ symbol/ the acceleration due to Earth’s gravity • abbreviation gram
G /[dʒiː]/ abbreviation giga-
GA abbreviation general aviation
gain /gɪn/ noun 1. an increase. ○ There is a gain of heat by the Earth due to solar radiation. ○ a gain in altitude an increase in altitude 2. an increase in signal power, voltage, or current ○ The amplifier boosts the gain of the incoming signal. 3. a benefit or advantage • verb 1. to increase ○ He failed the test because the aircraft gained 100 ft in the 360° level turn. 2. to get or obtain ○ She gained a pass in her meteorology exam.
gale /ɡeɪl/ noun a very strong wind usually blowing from a single direction ○ Gales are forecast for the area.
gallon /ˈɡælən/ noun 1. imperial gallon unit of volume in the British Imperial System, used in liquid measure and sometimes in dry measure, equal to 4.546 litres ○ The system delivers fuel at the rate of 100 to 2,000 gallons per hour. Abbreviation gal 2. a unit of volume in the US Customary System, used in liquid measure, equal to 3.785 litres
GAMA abbreviation General Aviation Manufacturers Association
gamma rays /ˈɡæmə rɛɪz/ plural noun electromagnetic radiation given off by some radioactive substances ○ Gamma rays are given off when radioactive material breaks down.
gap /gæp/ noun 1. a space between objects or points 2. the difference ○ Micro switches have a very small gap between make and break 3. an opening ○ The pilot could see the airfield through a gap in the clouds.
gas /ɡæs/ noun a state of matter other than solid and liquid ○ Oxygen and nitrogen are gases. ○ gas turbine engine an engine with a turbine which is rotated by expanding hot gases
gaseous /ˈɡæsɪəs/ adjective relating to, or existing as a gas ○ The atmosphere is the gaseous envelope surrounding the earth.
gasket /ˈɡæskɪt/ noun any of a wide variety of seals or packings used between matched machine parts or around pipe joints to prevent the escape of a gas or fluid ○ Seals, gaskets and packing make a seal by being squeezed between two surfaces.
gasoline /ˈɡæsəliːn/ noun US a liquid made from petroleum, used as a fuel in an internal combustion engine
GAT abbreviation general air traffic
gate /ɡeɪt/ noun 1. a device for controlling the passage of water or gas through a pipe ○ The waste gate may be controlled manually by the pilot. ○ During a descent from altitude, with low power set, the turbocharger waste gate is fully closed. 2. a circuit with many inputs and one output that works only when a particular input is received ○ A logic gate is almost the same as a switch. 3. a device to prevent a lever from being moved to an incorrect setting ○ It is necessary to move the rpm control lever through a feathering gate to the feathering position.
gauge /ɡeɪdʒ/ noun 1. an instrument for measuring or testing ○ temperature gauge ○ pressure gauge 2. a unit of
diameter or width  □ heavy gauge wire
thick wire □ verb calculate approximately by using the senses □ In fog, it is difficult to gauge horizontal distances.
(NOTE: gauging – gauged)

GCA  abbreviation  ground-effect machine

genera  /dʒenəriəl/ plural of genus
general  /dʒenəral/ adjective concerned with or applicable to a whole group of people or things □ general description not a detailed description □ general principles main ideas □ general purpose switches all-purpose switches □ general weather situation the overall weather picture without the detail □ as a general rule usually □ in general use used a lot

general aviation  /dʒenəraləvəˈeɪʃən/ □ all aviation other than commercial airlines or the military □ The number of GA aircraft stolen is down sharply since the general aviation community has taken steps to enhance security. Abbreviation GA

general flying test  /dʒenərəliŋtɛst/ □ a test of aircraft-handling skills for student pilots. Abbreviation GFT

generate  /dʒenəreɪt/ verb 1. to bring into being □ In an emergency, it may be necessary for crew to generate a little panic in passengers to motivate them to move. 2. to produce something such as heat or electricity as a result of a chemical or physical process □ The passage of air around the wing generates lift.

generation  /dʒenəˈreɪʃən/ noun 1. the act or process of creating or making □ a generation of ideas the process of producing or getting ideas □ generation of electricity the production of electricity 2. a class of objects derived from an earlier class □ a new generation of computers computers which share a recent development in computer technology which separates them as a class from earlier computers

generator  /dʒenəreɪtər/ noun a power-operated device for making electricity □ Starter generators are a combination of a generator and a starter housed in one unit.

genus  /dʒəˈnəs/ noun a class, group, or family □ Various types of cloud are grouped into ten basic cloud genera.
(Note: The plural form is genera.)

diameter or width  □ geometric pitch
the angle which a propeller blade makes with the axis of rotation

geostationary  /dʒiˈstænətri/ adjective referring to a satellite which rotates round the Earth at the same speed as the Earth and is therefore stationary with reference to a point on the Earth □ There are two main types of satellite that are used for collection and...
transmission of meteorological data, polar and geostationary.

gliding /'glaɪdɪŋ/ noun 1. flying in a glider ♦ gliding club association of members who fly gliders as a pastime 2. flying in a powered aircraft with the engine either switched off or idling ♦ The best gliding speed for the aircraft is 75 knots.

COMMENT: On June 24th 1982, a British Airways 747 flying from Kuala Lumpur to Perth lost all power from all four engines for 13 minutes, yet landed safely in Jakarta: proof that even a large aircraft is capable of gliding.

globe /'glaʊb/ noun an object shaped like a ball ♦ If the Earth were a uniform globe, the average temperature would vary only with latitude.

GLONASS noun a system of satellite navigation operated by Russia. Full form Global Orbiting Navigation Satellite System

GFT abbreviation general flying test

GHz abbreviation gigahertz

giga- /'dʒɪɡə-/ prefix one thousand million. Symbol G

radar /'reɪdər/ noun a radio system for detecting distant objects, especially for navigation of aircraft and ships

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The course.

nations were not allowed to continue below a particular grade in the examination with a first class honours degree. A warning system opening slowly but continuously grade used in aircraft composites.

2. granted an academic degree or diploma scale of size or quality which a quantity such as temperature or pressure changes relative to change in a quantity, number, etc.

of cabin pressure may be gradual rather than sudden. 

a change which takes place over a period of time

She graduated from Oxford University with a first class honours degree. 

to advance to a new level of skill, achievement, or activity. 

A thermometer has a scale graduated in degrees Celsius.

A graph shows the relationship between lift and drag at various airspeeds.
expressed in 24-hour format; for example, 7:30 P.M. is 1900 hours (say: nineteen hundred hours).

grid (grid) noun 1. a pattern of equally spaced vertical and horizontal lines, sometimes used on a map. Grid lines facilitate the quick location of a point of reference. 2. a metal cylinder in a cathode ray tube. 3. a pattern of equally spaced vertical and horizontal metal rods or bars. Lead-antimony alloy grid plates are components in a lead-acid battery.

ground (ground) noun 1. the solid surface of the earth. Hail being much denser and heavier than snow, falls at a much faster rate and can reach the ground even with the 0° isotherm at 10,000 ft. verb 1. to prohibit an aircraft or member of an aircrew from flying. The pilot was grounded after failing a medical examination. 2. US to connect an electrical circuit to a position of zero potential. While refuelling a light aircraft it is important to ground the airframe to prevent sparking caused by static electricity. (NOTE: To earth is preferred in British English.)

ground crew (ground crew) noun a team of employees who service and maintain the aircraft while it is on the ground.

ground-effect machine (ground-effect machine) noun. a hovercraft. Abbreviation GEM.

ground elevation (ground elevation) noun the vertical distance, in feet, of the ground above sea level.

ground instructor (ground instructor) noun a trained person who teaches support subjects such as meteorology in a classroom.

grounding (grounding) noun a member of the ground crew at an airport or air force base.

ground loop (ground loop) noun a sharp unplanned turn made by an aircraft that is taxiing, taking off, or landing, caused by unbalanced drag.

ground movement (ground movement) noun a manoeuvre such as taxiing carried out by an aircraft while on the ground, or any movement on an airfield by people or surface vehicles.

ground position (ground position) noun the point on the surface of the Earth immediately beneath the aircraft.

ground proximity warning system (ground proximity warning system) noun a system in aircraft which warns pilot, by means of an audible signal, that the aircraft is below a preset height. Abbreviation GPWS.

ground-running operation (ground-running operation) noun a procedure of running the engine while the aircraft is stationary on the ground to check engine performance.

ground signal (ground signal) noun a visual signal displayed on an airfield to give information about local traffic rules to aircraft in the air.

ground speed (ground speed) noun the speed of the aircraft in relation to the ground over which it is flying. Abbreviation GS, G/S.

ground temperature (ground temperature) noun the temperature recorded by a thermometer placed at ground level.

ground visibility (ground visibility) noun horizontal visibility near the surface of the earth.

group (group) noun 1. a number of individual items or people brought together because of similarities. 2. a collection of letters, numbers or symbols used in weather forecasting, etc.

growth (growth) noun an increase in size, number, amount, etc., the growth of ice crystals, the growth of air travel. GRP abbreviation glass fibre reinforced plastic. GS, G/S abbreviation ground speed.

guard (guard) noun 1. a device to prevent injury or loss, etc. The temperature couple probes consist of two wires of dissimilar metal that are joined together inside a metal guard tube. 2. a person who protects or keeps watch. A security guard.

against to take steps to ensure that
something does not happen ○ To guard against the risk of fire, passengers are requested not to smoke in the toilets.

guidance /ˈɡaid(ə)nəʊ/ noun 1. helpful advice ○ Guidance is provided to assist people in filling in the form. ○ The booklet contains guidance on the advisability of flying with a cold. 2. the action of giving directions to an aircraft.

guidance system /ˈɡaid(ə)nəʊˌsɪstən/ noun a system which provides signals to the flight control system for steering the aircraft.

guide /ɡaid/ noun something that directs or indicates ○ Rough guide a simple explanation to help a person to find his or her own way through more complex information. ○ Verb to direct or to indicate ○ If there is smoke in the cabin, clear commands from the crew will help to guide passengers to the emergency exits.

gust /ɡʌst/ noun a strong, sudden rush of wind ○ A gust of 30 feet per second ○ On final approach, the pilot must be prepared to counteract the effect of gusts in order to maintain a smooth descent along the extended centreline of the runway. ○ Gust load an increased load to the airframe caused by a sudden increase in wind strength. ○ Verb to increase in strength suddenly ○ Wind is at 10 knots gusting to 20 knots.

gyro /ˈdʒaɪrəʊ/ noun same as gyroscope.

gyro- /ˈdʒaɪrəʊ/ prefix gyroscopic

gyrocompass /ˈdʒaɪrəʊˌkʌmpəs/ noun a compass which uses gyroscopic directional stability rather than magnetism to indicate direction. ○ The gyrocompass should be checked against the magnetic compass and reset if necessary.

gyroplane /ˈdʒaɪrəʊpʌləm/ noun an aircraft fitted with an unpowered rotor for producing lift.

gyroscopic /ˌdʒaɪrəʊˈskəʊpɪk/ adjective referring to a gyroscope or using the properties of a gyroscope.

gyroscopic compass /ˈdʒaɪrəʊˌskɒmpəs/ noun a compass which uses gyroscopic directional stability rather than magnetism to indicate directions. Also called gyrocompass.

gyroscopic precession /ˌdʒaɪrəʊˈskærəʃən/ noun a characteristic of a gyroscope, that the force applied to a spinning gyroscope will act at a point 90° in the direction of rotation, not at the point where the force is applied. ○ Forces of gyroscopic precession act on the direction indicator to keep it aligned vertically and horizontally.
hail /heɪl/ noun precipitation as small pellets of ice. Precipitation is the falling of water, as rain, sleet, snow or hail onto the surface of the earth. Although hail, and in particular, heavy hail is rare and of short duration, damage to an aircraft may be severe.

COMMENT: In weather reports and forecasts, hail is indicated by the abbreviation ‘GR’.

hailstone /ˈheɪlstəʊn/ noun a small pellet of ice which falls from clouds. A hailstone starts as a small ice particle in the upper portion of a cumulonimbus cloud.

hailstorm /ˈheɪlstɔːrm/ noun a storm, where the precipitation is hail instead of rain or snow. Flying through the hailstorm damaged the leading edges.

hand flying /ˈhændˈflaɪŋ/ noun flying an aircraft by moving the flight controls with the hands rather than by using the autopilot.

hand-held /ˈhænd hɛld/ adjective possible to hold in the hand. Nowadays, headsets are usually used in preference to hand-held microphones.

hold
handle /ˈhænd(ə)l/ noun a device for holding, or being operated, by the hand. a door handle, a fire control handle
verb 1. to touch with the hands
Cabin staff should not handle unwrapped food which is to be served to passengers. 2. to move or operate by hand. The student pilot handled the aircraft well in the turbulent conditions. 3. to deal with, or to manage. Flight crew must be able to handle any emergency when it occurs.

handling /ˈhænd(ɪ)ndʒ/ noun 1. the act of touching with the hands. 2. the use of the hands to move or operate something. aircraft handling the act of manoeuvring the aircraft in the desired manner. 3. the act of dealing with or managing something. Her handling of a difficult situation won the admiration of the whole crew.

hand luggage /ˈhænd ˈlʌjdʒ/ noun small bags that passengers can take with them into the cabin of an aircraft. The amount of hand luggage is limited to one bag.

hand signals /ˈhænd ˈsɪɡn(ə)lz/ plural noun same as marshalling signals.

hands off /ˈhændz ˈɒf/ adjective, adverb where the operator does not control the operation, which is automatic. Automatic flight control system capable of landing an aircraft hands off.

hangar /ˈhæŋə/ noun a large shelter for housing and maintaining aircraft. Light aircraft should be left with parking brakes off so that they can be moved quickly in the event of a fire in the hangar.

hard landing /ˈhɑːrd ˈlændɪŋ/ noun an uncontrolled landing by an aircraft that results in its being damaged or destroyed.

HASELL mnemonic
haul /hɔːl/ noun long-haul, short-haul
hazard /ˈhæzəd/ noun a possible danger. Thunderclouds are of special interest to aircrew because of the hazards they may pose to aircraft in flight.
hazardous /ˈhæzərdoʊs/ adjective possibly risky or dangerous. Flying over mountainous terrain can be hazardous.
Structural icing is a hazardous phenomenon for rotary wing as well as fixed wing aircraft.
haze /hɛz/ noun dust or smoke in the atmosphere. Haze can seriously reduce air-to-ground visibility.
head /hɛd/ noun 1. the top part of the body above the shoulders. 2. a person. 3. the most senior person in the department. 4. verb to fly in a particular direction. 5. head north to fly towards the north.
heading /ˈhɛdɪŋ/ noun the direction in which the longitudinal axis of the aircraft is pointing, expressed in degrees from north.
heading correction /ˈhɛdɪŋ kɔrˈrekʃən/ noun a change of heading in order to deal with a new situation. Also called course correction.
heading indicator /ˈhɛdɪŋ ɪnˈdɪkətər/ noun an instrument which gives course or direction information e.g. a horizontal situation indicator (HSI) or direction indicator (DI).
heading to steer /ˈhɛdɪŋ tu ˈstɪər/ noun a gyroscope point in which to direct the aircraft.
head-on /ˈhɛd ən/ adjective, adverb 1. to approach head-on to approach from opposite directions.
head-on collision /ˌhɛd ən kəˈlon/ noun a collision between two things or vehicles coming from opposite directions.

headphones /ˈhedfounz/ noun small speakers with padding, worn over a person’s ears, used for private listening. Headphones are used to monitor the signal.
headset /ˈhedset/ noun headphones with a microphone attached, used for RT communications. Headsets are usually used in preference to hand-held microphones.
head-up display noun a cockpit system where data from flight instruments is projected onto a screen or the windshield so that the pilot can see it without having to look down. Abbreviation HUD.
headwind /ˈhedwɪnd/ noun a wind which is blowing in the opposite direction to the direction of movement or flight. Compare tailwind. (NOTE: The word is also written head wind.)
headwind component /ˈhedwɪnd ˈkɔmpənənt/ noun one of the three possible components of a wind, the other two being crosswind and tailwind.
heap /hiːp/ noun a group of things piled or thrown one on top of another.
head cloud /ˈhɛd klaʊd/ noun same as cumulus cloud.
heat /hɛt/ noun warmth, being hot. The heat generated by combustion is considerable. 1. verb to make warm or warmer. 2. The air leaving the turbocharger is very warm and can be used to heat the cabin.
heater /ˈhɛtər/ noun a device for heating. Pitot heads contain heater elements to prevent icing.
heating /ˈhɛtɪŋ/ noun the process of making something warmer. 1. the heating action of the sun. 2. kinetic.
heavier-than-air /ˈheviər ˈθiːər/ adjective weighing more than the air it displaces, and so needing power to fly. 1. heavy having a lot of weight. 2. a heavy load a load of great weight. 3. heavy rain which is dense and distributes a lot of water over the surface of the Earth in a relatively short time.
heavy-duty /ˈhevi ˈdʒʌrti/ adjective referring to something designed for
hard wear or use ○ a heavy-duty battery ○ Longerons are heavy-duty steel members.

**heavy landing** /heti 'laendin/ noun a routine landing in which the aircraft makes contact with the surface with more force than usual, thereby possibly causing damage to the undercarriage ○ The pilot reported a heavy landing.

**hedgehop** /'hedʒhɒp/ verb to fly at very low height above the ground

**height** /hæt/ noun the vertical distance of a point, level or object measured from a particular point, e.g. sea level ○ Pressure decreases with increasing height ○ **height of the aircraft** the vertical distance, measured in feet, of the aircraft above the surface of the earth

**held** /hɛld/ hold

**helicopter** /'helɪkəptər/ noun an aircraft with one or more rotors rotating around vertical axes which provide lift and control ○ **Helicopter operations are carried out at the airport.** ○ **helicopter rotor** /helɪkəptə 'raʊtə/ noun two or more rotating blades, known as the main rotor, which provide lift and thrust for a helicopter;

**helideck** /'helɪdɛk/ noun a deck on something such as a ship or offshore oil platform that is used as a landing area for helicopters

**heliograph** /'hɛliəɡrɑf/ noun an instrument with a mirror to send messages by reflecting the sun ○ **Heliographs enable reflected sunlight to be directed to a ship or aircraft in periods of direct sunlight.**

**helipad** /'hɛlɪpæd/ noun an area where helicopters take off and land

**heliport** /'hɛlɪpɔːt/ noun an airport designed for helicopters

**helistop** /'helɪstɔp/ noun a place where helicopters can take off and land, but usually one that does not have the support facilities found at a heliport

**helo** /'heləʊ/ noun 1. a rotary-winged aircraft 2. same as heliport

**hemisphere** /ˈhæmɪsfɪə/ noun half a sphere

**Hertz** /ˈhɜːts/ noun the SI unit of frequency, defined as the number of cycles per second of time. Abbreviation Hz ○ **HF** abbreviation high frequency

**high** /haɪ/ adjective 1. having great vertical distance ○ a high mountain 2. great, large, a lot ○ **high engine rpm** fast engine speed ○ **high pressure** a lot of pressure ○ **high reliability** good reliability ○ **high speed** a fast speed ○ **high temperature** a hot temperature ○ **high frequency** /ˈhɑːfrɪkwənsi/, high frequency band ○ **hijack** /hɪdʒɪk/ verb to take over control of an aircraft by one or several unauthorised person or persons with the intention of forcing the crew to fly it to a different destination ○ The airliner was hijacked on its way to Paris.

**high performance aircraft** /ˌhɑːpərˈfɔːrməns ˈɛəkrɑft/ noun an aircraft capable of flying faster, higher or with more manoeuvrability than normal aircraft

**hijacker** /hɪdʒɪˈkeɪkər/ noun a person who hijacks an aircraft or other vehicle

**hijacking** /hɪdʒɪˈkeɪkɪŋ/ noun the act of taking over control of an aircraft by one or several unauthorised person or persons with the intention of forcing the crew to fly it to a different destination ○ The crew must be alert at all times to the possibility of hijacking, bombs and stowaways.

**hill** /hɪl/ noun an easily-seen, natural elevation, smaller than a mountain ○ Slopes on the side of a hill or mountain facing away from the sun receive less intense radiation ○ **hill shading** is pro-
hinder

duced by assuming that bright light is shining across the chart sheet so that shadows are cast by the high ground.

hinder /ˈhɪndər/ verb to make it difficult for something to happen. Free flow of fuel may be hindered by a blockage in the fuel line. Her illness hindered his progress on the course.

hinge /ˈhɪndʒ/ noun a device which allows a door, flap or lid to open and close on a stationary frame. Flying control hinges should be inspected before flight. verb to move against a stationary frame. Access to the engine compartment is normally via hinged cowling panels.

HIRF abbreviation high-intensity radiated fields

HMR abbreviation helicopter main route

hoar /ˈhɔːr, ˈhoər/ hoar frost noun a frozen dew which forms on outside surfaces when the temperature falls below freezing point. Rapid descent from cold altitudes into warm moist air may produce hoar frost on the aircraft.

hold /həʊld/ noun an area or compartment within the aircraft for carrying freight. Carry-on baggage is limited by regulations as to size and weight and items in excess of this should be stowed in the luggage hold. verb 1. to keep and prevent from moving. The function of the autopilot system is to hold the aircraft on a desired flight path by means of gyroscopes and/or accelerometers. 2. If the operating pressure falls or fails, a mechanical lock holds the reverser in the forward thrust position.

holding stack /ˈhəʊldɪŋ ˈstæk/ an area of airspace where planes are instructed to wait before landing if there are delays. Aircraft circle and descend according to the controller’s instructions until they are released from the lowest height in the stack for their final approach to the airport.

holding point /ˈhəʊldɪŋ ˈpɔɪnt/ noun 1. a particular location, in the airport or on the ground where aircraft spend time, waiting for further clearance from air traffic control. 2. a place, often designated Alpha, Bravo, Charlie, etc., where aircraft wait before entering the runway, as instructed by air traffic control.

hollow /ˈhɒluː/ adjective having a space within, not solid. a hollow drive shaft.

home /həʊm/ noun the home airfield. the home airfield which one returns to after a two-leg flight.

homeward /ˈhəʊmwərd/ adjective going towards home. homeward journey. adverb homeward bound heading towards home.

homewards /ˈhəʊmwərds/ adverb towards home. They were heading homewards when the accident happened.

homing /ˈhəʊmɪŋ/ noun a flight towards or away from a radio station while using direction finding equipment. Where an RBI is fitted, homing to an NDB can be made by initially turning the aircraft until the relative bearing is zero.
homogeneous /ˌhɔməgəˈdiəniəs/ adjective of the same kind o If the air over a large region were homogeneous, there would be no horizontal differences in surface temperature. o The atmosphere is not homogeneous — pressure, temperature and humidity can all change with height.

hop /hɔp/ noun a flight or section of a flight in an aircraft (informal)

horizon /ˈhɔrəraɪzn/ noun the line where the sky and the ground appear to join o visual horizon a horizon which can be seen

horizontal /ˈhɔrɪznəl/ adjective parallel to the horizon, or at right angles to the vertical o The horizontal motion of air is known as wind.

horizontal axis /ˈhɔrɪznəl əksəs/ noun a horizontal reference line of a graph o The pilot shows the effect of airspeed on lift with airspeed shown on the horizontal axis and lift on the vertical axis.

horizontal situation indicator /ˈhɔrɪznəl ˈsɪteɪˌkeɪtərɪ/ noun a cockpit instrument which gives the pilot information about the direction of the aircraft’s flight path o On the aircraft, the horizontal situation indicator is located on the instrument panel below the attitude indicator. Abbreviation HSI

COMMENT: The horizontal situation indicator combines the function of the heading indicator and a VOR/ILS display.

horizontal stabiliser /ˈhɔrɪznəl ˈstæbəlaɪzər/ noun a tailplane o The horizontal stabiliser provides stability about the lateral axis of the aircraft.

horn /hɔrn/ noun a device for projecting sound o warning horn device which emits a loud warning noise

horn balance /ˈhɔrn ˌbɔl(ə)ns/ noun part of a control surface forward of the hinge line which reduces the force needed by the pilot to move the surface

horsepower /ˈhɔrspɔʊər/ noun the accepted unit for measuring the rate of doing work o Horsepower is defined as 33,000 foot-pounds of work done in one minute. Abbreviation h.p., HP

hose /həʊz/ noun a long, flexible pipe usually made of fabric, plastic or rubber for pumping gases or liquids o refueling hose a flexible pipe used to pump fuel from the bowser to the aircraft

hot /hɔt/ adjective very warm, having a high temperature o hot weather o hot air air introduced to melt ice forming in the carburettor in a piston engine aircraft

hour /ˈhaʊər/ noun 1. a period of time which lasts sixty minutes o It’s a three-hour flight to Greece from London. 2. a method of indicating time o Flight BA 321 landed at Heathrow at 10.30 hours.

house /həʊz/ verb to contain or accommodate o The areas between the ribs in the wings are utilised to house fuel tanks. o The wing tips house the navigation lights.

housing /ˈhauzn/ noun a compartment or container o The crankcase is the housing that encloses the various mechanical parts surrounding the crankshaft. o engine housing engine compartment

hover /ˈhʌvə/ verb to remain stationary, relative to the earth, while in the air o a period of stationary flight o During a hover, helicopter pilots must be able to coordinate movements of both hands and feet.

hovercraft /ˈhʌvəkrɑːft/ noun a vehicle that can travel over land and water supported on a cushion of air that is produced by a powerful engine that blows air downwards. Also called air cushion vehicle, ground effect machine

however /ˈhauvər/ adverb but o The wind was gusty, however the landing was good. o The incident was serious, however she escaped with only a warning.

hrs abbreviation hours

HSI abbreviation horizontal situation indicator

hub /ˈhʌb/ noun a major airport where international or long-distance flights take off and land
hub airport /'hæb ,espəst/  noun
same as hub
HUD abbreviation head-up display
human factors /'hjuːmən ˈfektəz/  noun the study of the way in which humans handle, and react to, things in their environment. It is used in aviation to develop safer systems and procedures. (Note: Human factors is followed by a verb in the singular.)
humid /'hjuːmɪd/ adjective containing a lot of water vapour ○ humid weather weather which, although warm, feels damp and uncomfortable ○ humidity /hjuːˈmɪdɪtɪ/ noun a measurement of how much water vapour is contained in the air ○ the humidity is high there is a lot of moisture or water vapour in the air ○ hydraulic /ˈhaɪdrəlɪk/ adjective referring to any system or device which uses fluids such as oil to transmit a force from one place to another using pipes ○ hydraulic pressure /haɪˈdrəʊlɪk 'prɛʃər/ noun the pressure exerted by hydraulic fluid ○ hydraulic tubing /ˈhaɪdrəlɪk ˈtjuːbɪŋ/ noun system of tubes or thin pipes connecting the main components of a hydraulic system ○ hydraulic fluid /haɪˈdrəlɪk ˈflʌɪd/ noun thin oil used in hydraulic braking systems, etc.
hydrometer /haɪˈdɾɒmətər/ noun an instrument used for the measurement of humidity ○ The most common type of hydrometer is the wet and dry bulb thermometer arrangement.
hypoxia /haɪˈpɒksɪə/ noun a medical condition in which not enough oxygen is supplied to the body ○ The symptoms of hypoxia are sometimes difficult to detect.

COMMENT: Cabin pressurisation or oxygen equipment is usually required for flying at altitudes at or above about 10,000 ft (3,048 m).
Hz abbreviation Hertz
which particular features on a chart, means by
tion of ground features
cross-section shaped like the letter ‘I’
or some other strong substance with a
situation
sible
as can be expected or the best pos-
exremely hazardous to flight.
cloud.
frame icing can be encountered in wave
controller to identify the aircraft
transponder panel which helps a con-
computers which are exactly the same
identical computers

crystals in the form of needles, plates or col-
type of precipitation composed of crys-
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idle rpm 116

light aircraft which allows the engine to be shut down without leaving a combustible fuel/air mixture in the engine

idle rpm /aɪd(ə)rɒm/ noun the speed at which a piston engine turns when it is not running fast enough to move the vehicle or aircraft, i.e. on a light aircraft when the throttle is almost closed

idling /ɪd(ɪ)lɪŋ/ noun a state in which the engine is turning over slowly without providing enough power to move the vehicle or aircraft

idling speed /ɪd(ɪ)lɪŋ sɪp(ɪ)d/ noun the rpm of the engine when it is idling

After start-up, the engine accelerates up to idling speed. Before the engine is stopped, it should normally be allowed to run for a short period at idling speed to ensure gradual cooling.

IF abbreviation 1. instrument flying 2. intermediate frequency

IFR abbreviation instrument flight rules

ignite /aɪg'næt/ verb to burn or cause to burn. The spark plug ignites the fuel/air mixture. The air/fuel mixture ignites.

igniter /aɪg'nətər/ noun a device for starting gas turbine engines.

An electric spark from the igniter plug starts combustion.

ignition /aɪg'nɪʃn/ noun 1. the starting of burning of a substance. Satisfactory ignition depends on the quality of the fuel. 2. the moment, in an internal combustion engine, when a spark from the spark plug causes the fuel/air mixture to burn. Ignition should occur just before top-dead-centre. 3. an electrical system, usually powered by a battery or magneto, that provides the spark to ignite the fuel mixture in an internal-combustion engine. Ignition problems are a source of many engine failures. 4. a switch that activates the ignition system. The key is in the ignition. The key is in its position in the ignition lock.

ignition key /aɪg'nɪʃn keɪ/ noun a key used to switch on the ignition

ignition lock /aɪg'nɪʃn lɒk/ noun a key-operated switch for activating the ignition circuit of an aircraft or a vehicle

illuminate /ɪljuˈmeɪnt/ verb 1. to give light to an otherwise dark area. A flare illuminates the ground below it. 2. to show a light or become bright. When the aircraft is 5 knots above stalling speed, a warning lamp illuminates.

illumination /ɪˌluːˌmɪnəˈʃən/ noun light. Batteries provide about 20 minutes illumination for the lamp.

daylight illumination the amount of light in normal daytime conditions

illustrate /ɪlˈɪstrɪteɪt/ verb 1. to demonstrate or explain clearly, often by using pictures. Contour charts illustrate the horizontal distribution of height above mean sea level. 2. to show as an example. A number of aviation disasters have illustrated the importance of clear, correct use of language in R/T (Radiotelephony) communications.

instrument landing system

ILS abbreviation instrument landing system

ILS glideslope /aɪ lɛs 'ɡlaɪdslaʊp/ noun a radio beam in an ILS which gives vertical guidance. The angle of the glide slope is usually about three degrees to the horizontal.

glideslope

ILS locator beacon /aɪ lɛs ləʊˈkeɪtər /bɪˈkɒn/ noun a non-directional beacon used for final approach.

IM abbreviation inner marker

image /ˈɪmɪdʒ/ noun a reproduction of the form of an object or person. Although difficult to see, the photograph shows the image of the aircraft with part of the fin missing. (Note: It suggests that the image has no detail and that it is the shape which is important.)
from the flight deck informs cabin staff on hearing. sure to very loud noise impairs the mission made it clear that the aircraft the base of the fuel tank. immersed booster pumps mounted on pumped from the main tanks via fully diate use in the event of an emergency. extinguishers should be ready for immediate use. equipment is used to prevent impairment of effectiveness. The pilot’s vision may be temporarily impaired by lightning flashes. An incorrect grade of fuel impairs engine performance. De-icing equipment is used to prevent impairment of the lifting surfaces through ice formation. A rotating propeller imparts rear- ward motion to a mass of air. Impedance is the total electrical resistance to current flow in an alternating current circuit. Impedance will vary with changes in frequency. Impede to hinder or obstruct progress. Hills and mountains impede the horizontal flow of air. Impeller a rotor used to force a fluid in a particular direction. Importance is of fundamental importance, of great importance, of prime importance, of utmost importance, of vital importance all mean very important.) Import duty payment made to a government on particular goods imported or exported the duty payable on a carton of cigarettes. Also called customs duty. Duty impose to make or become better. Turbochargers improve aircraft performance. The trainee’s flying skills improved a lot in a short period of time. Improvement is the process of becoming better, or something that makes a thing better. An improvement in weather conditions enabled the flight to depart. Impulse a force of short duration. A magneto is designed to produce electrical impulses one after another at precise intervals, so that each separate impulse can be used to provide a spark at a spark plug. Impulse magneto a magneto with a mechanism to give a sudden rotation and thus produce a strong spark. Inability the fact of being unable to do something. Inactive not switched on, in a passive state. 117
time of the accident the autopilot was inactive.

inadvertent /ɪnˈvɜːrnt/ adjective not intended, not meant, accidental
A safety mechanism prevents inadvertent retraction of the undercarriage while the aircraft is on the ground.

inboard /ˈɪnboʊrd/ adjective closer to the centre of an aircraft rather than the sides or edges

inbound /ˈɪnboʊnd/ adjective towards a destination 
The aircraft flies outbound from the beacon along the airway and inbound to the facility at the other end of the leg. 

incapacity /ɪnˈkeɪspəti/ noun the inability to do what is needed, not having the necessary power to do something 
crew incapacity an injury to a crew member which prevents him or her from performing his or her normal duties. 

incident /ˈɪnːsand/ noun the frequency of occurrence 
The incidence of structural failure has decreased with the introduction of modern construction materials and techniques.

incidence /ɪnˈsɪdəns/ noun an event or happening which interrupts normal procedure 
A violent passenger had to be removed from the aircraft before departure, and details of the incident were reported in the local newspapers.

...in 1995, a pilot flying above Las Vegas was struck by a laser beam and incapacitated for more than two hours. It was one of over fifty incidents involving lasers and aircraft reported in the area that year [Pilot]

inclination /ɪnˈklɪnʃ(ə)n/ noun a slope or slant from the horizontal or vertical

The runway inclines slightly upwards.

The incidence is a steep incline at the end of the runway.

incorporate /ɪnˈkɔrəpt/ verb to include as part of something which already exists 
Some types of outflow valve incorporate safety valves.

incorporation /ɪnˈkɔrəpəræʃ(ə)n/ noun the action of incorporating something into something else

increase noun /ɪnˈkriːs/ a rise to a greater number or degree 
Decreasing engine rpm results in an increase in the rate of descent.

incurrence /ɪnˈkɜːrəns/ noun the lower part of a turn coordinator, in which a ball in a sealed curved tube indicates if a turn is coordinated. 
Also called rudder ball, ball.
indicated airspeed /indikıttetd ˈɛəspɪd/ noun the airspeed shown by the cockpit or flight-deck instrument. The aircraft stalls at an indicated airspeed of 50 knots. Abbreviation IAS

indication /ɪndɪˈkeɪʃn/ noun 1. pointing out ∙ Indication of altitude is given on the altimeter. 2. a sign or symptom ∙ A drop in engine rpm is an indication of ice forming in the carburettor. ∙ audible indication a sound which serves as a warning, e.g. a bleep

indicator /ɪndɪˈkeɪtər/ noun something which shows information

individual /ˌɪndɪˈvidʒəl/ adjective existing as a separate thing ∙ The hydraulic braking system consists of a master cylinder with individual brake cylinders at each wheel. ∙ There is a maintenance manual for each individual engine. ∙ noun a separate human being considered as one rather than as a member of a larger group. ∙ The instructor regards her trainees as a number of individuals rather than a group.

induce /ɪndjʊs/ verb to bring about, to cause to happen ∙ If a coil carrying a changing current is placed near another coil, the changing magnetic field cuts the other coil and induces a voltage in it. ∙ Unequal deposits on moving parts can induce severe vibration especially on propellers and helicopter rotors.

induced drag /ˈɪndjʊst/ ˈdɹɡ/ noun part of total drag, created by lift. ∙ There are two basic types of drag, induced drag and parasite drag.

COMMENT: Induced drag is created when high-pressure air below a wing rotates around the tip to the low-pressure area above and increases as airspeed decreases and angle of attack increases.

inductance /ɪnˈdʌktəns/ noun a measure of a conductor’s ability to bring a voltage into itself when carrying a changing current, e.g. during short times when the circuit is switched on or off. ∙ At low frequencies, the rate of collapse of the magnetic field will be slow and the inductance will be low.

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verb /ˈɪnˈkriːs/ to become greater or more, to rise. ∙ As you increase height, the countryside below you appears to flatten out. Opposite reduce ∙ opposite (all senses) decrease

increment /ɪnˈkrɪmənt/ noun something added ∙ The minimum detection range of a pulse radar system is equal to half the pulse length plus a small increment.

incur /ɪnˈkɜːr/ verb to acquire or to receive something, often something unwanted ∙ Fuel penalties can be incurred if fuel surplus to requirements is carried. ∙ In some aircraft, the datum shift is operated automatically to cater for any large trim changes incurred by operating undercarriage, flaps, etc. (NOTE: Incurring — incurred) ∙ to incur a financial loss to lose money, in a business or commercial sense

indefinite /ɪnˈdefɪnət/ adjective without limits ∙ an indefinite period of time a period of time which, in reality, may have no end

independent /ˈɪndɪpəndənt/ adjective free from the influence or effects of other people or things ∙ Airspeed is independent of wind and is the same regardless whether the aircraft is flying upwind, downwind or at any angle to the wind. ∙ independent system a system which can operate by itself

index /ˈɪndeks/ noun an alphabetical list of references to page numbers found at the end of a book or long document. (NOTE: The plural form is indices or indexes /ˈɪndɪksi/.)

index letter /ˈɪndeksˌletər/ noun a letter or number which makes it easier to reference or look up information ∙ Each observing meteorological station is shown on the chart as a small circle, identified by its own index number.

indicate /ˈɪndɪkeɪt/ verb 1. to show or point out ∙ A lamp on the instrument panel will indicate when the pump is operating. ∙ The needle indicated to zero. 2. to serve as a sign or symptom ∙ Black smoke from the exhaust may indicate a rich mixture or worn piston rings.
induction /ɪnˈdʌkʃən/ noun 1. the process by which the fuel/air mixture is drawn into the cylinders of an internal combustion engine. 2. the production of electrical current in a conductor by a change of magnetic field. A transformer is a static device that changes the amplitude or phase of an alternating voltage or current by electro-magnetic induction.

inductive /ɪnˈdʌktɪv/ adjective referring to the production of electrical current in a conductor by a change of magnetic field. One side effect of low frequency in an inductive circuit is that excess heat may be produced.

inductor /ɪnˈdʌkta(r)/ noun a component in the ignition system that produces electrical current in itself by a change of magnetic field.

inert /ɪnˈɜːr/ adjective not reacting with other substance.

inert gas /ɪnˈɜːr/ noun a gas that does not react with other substances. Inert gases, dust, smoke, salt, volcanic ash, oxygen and nitrogen together constitute 99% of the atmosphere. (NOTE: The inert gases include helium, neon, argon, krypton and xenon.)

inertia /ɪnˈɜːrə/ noun the tendency of a body at rest to stay at rest or of a moving body to continue moving in a straight line unless acted on by an outside force. Inertia switches operate automatically when a particular g (acceleration due to Earth’s gravity) loading occurs.

inertial /ɪnˈɜːrəl/ adjective referring to inertia.

inertial navigation system /ɪnˌɜːrəl ˌnæviˈɡeɪʃən ˈsɪstəm/ noun a navigation system which calculates aircraft position by comparing measurements of acceleration with stored data, using gyro rather than radars. Abbreviation INS

infrangible /ɪnˈfʌrənʤəl/ adjective obtained by deduction. The inferential method of ice detection is used in flight trials for aircraft certification.

inflammable /ɪnˈflæməbl/ adjective easily set on fire. Petrol is an inflammable liquid. (NOTE: Flammable and inflammable mean the same thing.) A highly inflammable liquid is very easily set on fire, and therefore hazardous.

inflatable /ɪnˈflætəbl/ adjective 1. the act of blowing air into something, e.g. a balloon or a tyre, and so increasing its size. A sharp pull on the cord will discharge the gas bottle and inflate the life jacket. Opposite deflatable

inflation /ɪnˈflækʃən/ noun 1. the act of blowing air into something, e.g. a balloon or a tyre, and so increasing its size. Tyre inflation pressures should be maintained within 4% limits. 2. a continuing increase in the price of things and a decrease in the buying power of money. Annual inflation is 4%. Opposite deflation

in-flight /ɪnˈflɪt/ adjective taking place during a flight. In-flight emergency. In-flight oil loss.

influence /ɪnˈfлуəns/ noun a power which affects people or things. The Atlantic Ocean has a great influence on the climate of the British Isles. A verb to have an effect on, to change. In an emergency, a crew member’s power of command will influence the reaction of passengers.

inform /ɪnˈfɔrm/ verb to tell somebody something. After a particularly heavy landing, the pilot should inform an engineer so that checks can be made to the aircraft structure.

information /ɪnˌfɔrmeɪʃən/ noun a collection of facts or data. Meteorological visibility gives information on the transparency of the atmosphere to a stationary ground observer. (NOTE: Information has no plural form.)

infra-/infra/ prefix below or beneath

infrared /ɪnˌfɜːrəd/, infra-red, infra-red adjective referring to the range of invisible radiation wavelengths from about 750 nanometres to 1 millimetre. Solar radiation is short wave and of high intensity while terrestrial radiation is infra-red.

infradense /ɪnˈfɜːrdɛns/ adjective not often. In northern Europe, thunderstorms are infrequent in winter time.
ingest /ɪnˈdʒest/ verb to take in, or to absorb into, something such as a jet engine through the intake. 

Jet engines may be damaged by ingested chunks of ice.

ingestion /ɪnˈdʒestʃən/ noun the act of taking something into something such as a jet engine through the intake. 

Ingestion of birds may seriously damage the blades of turbo-fan engines.

inherent /ɪnˈhɛrənt/ adjective existing as a basic or fundamental characteristic. 

A boiling point of 100°C is an inherent characteristic of water.

in hg noun the unit for measuring absolute pressure. Full form inch(es) of mercury.

inhibit /ɪnˈhɪbɪt/ verb to prevent or to limit the effect of something. 

Cloud cover inhibits cooling of the Earth’s surface at night.

inhibition /ɪnˈhɪbɪʃən/ noun the prevention or limitation of the effect of something. 

Fuel contains chemicals for the inhibition of fungal growth.

inhibitor /ɪnˈhɪbɪtər/ noun a device or substance which prevents or limits the effect of something. 

Icing inhibitor a substance added to fuel to prevent fuel system icing.

initial /ɪnˈʃjuːəl/ adjective relating to or occurring at the beginning. 

initial climb the period of climb immediately after take-off. 

initial letter the first letter of a word. 

initial stage first stage. 

initials /ɪnˈʃjuːəls/ plural noun the first letters of a name. 

His name is John Smith, his initials are JS.

initiate /ɪnˈʃɪət/ verb to get something going by taking the first step, to start. 

In a serious emergency, a member of the cabin crew may initiate an evacuation of the aircraft.

initiation /ɪnˈʃɪəʃən/ noun the act of getting something going by taking the first step, starting. 

Normally speaking, the captain is responsible for the initiation of emergency procedures.

initiative /ɪnˈʃɪətɪv/ noun the power or ability to begin or to follow through competently with a plan or task. 

Crew members must be able to act collectively and with initiative in unusual situations.

inject /ɪnˈdʒɛkt/ verb to force or drive a fluid into something. 

An accelerator pump, operated by the movement of the throttle lever, injects fuel into the choke tube.

injection /ɪnˈdʒɛkʃən/ noun the forcing of fluid into something. 

Power output can be boosted to a value over 100% maximum power, by the injection of a water methanol mixture at the compressor inlet or at the combustion chamber inlet.

injector /ɪnˈdʒɛktər/ noun a device that will force or drive a fluid into something.

injury /ˈɪndʒəri/ noun damage or harm done to a person. 

Escape slides are designed to minimise the risk of injury to passengers when leaving the aircraft.

inland /ˈɪnlænd/ adjective, adverb referring to the interior of a country or land mass. 

Sea fog can extend for considerable distances inland.

inlet /ˈɪnlɛt/ noun 1. an opening which allows an intake of something. 

Turbine inlet. 

Combustion chamber inlet. 

Air enters the cabin through an inlet. 

2. a coastal feature such as at the mouth of a river.

inlet valve /ˈɪnlɛt ˈvælv/ noun the valve in a piston engine which allows fuel to enter the cylinder.

inner /ˈɪnər/ adjective positioned farther inside. 

Inner wing the part of the wing near the fuselage.

Inner marker /ˈɪnər ˈmɑrkər/ noun an ILS marker beacon placed between the middle marker and the end of the ILS runway.

inoperative /ɪnəˈpərətɪv/ adjective not functioning. 

To prevent accidental retraction of the undercarriage, a safety switch is fitted in such a way to the oleo, that when it is compressed on the ground, the ‘undercarriage up’ selection is inoperative.

input /ˈɪnpʊt/ noun something such as energy, electrical power or information, put into a system to achieve output or a result. 

Pumps require high input cur-
rent. If the number of turns on the secondary winding is greater than the number of turns on the primary, the output voltage from the secondary will be greater than the input voltage to the primary. Pilot control input movements on the flying controls made by the pilot.

**INS**

***abbreviation*** inertial navigation system

**insert** /ɪnˈsɛrt/ verb to put in or into To prevent tyre explosion due to overheating, fusible plugs are inserted into the wheel assemblies. Insert your telephone number in the space provided on the form. Insert the key in the lock and turn it.

**insertion** /ɪnˈsɛrʃ(ə)n/ noun the act of putting in or into There is a space on the form for the insertion of a postal address. When the contours for a particular pressure level have been drawn in, the chart is completed by insertion of spot temperatures and wind speed information.

**insignificant** /ɪnˈsɪɡnɪfɪkənt/ adjective not important, of no consequence Minor changes in wind speed or direction are insignificant.

**inspect** /ɪnˈspekt/ verb to look at something closely and to check for problems or defects Propellers should be inspected prior to flight.

**inspection** /ɪnˈspekʃ(ə)n/ noun a careful check for problems Before flight, the pilot should carry out a careful inspection of the aircraft.

**instability** /ɪnˈstæbɪləti/ noun a condition in which a body or mass moves easily, and with increasing speed, away from its original position Atmospheric instability often results in strong vertical currents of air. The built-in instability of some modern fighter aircraft makes them highly manoeuvrable but difficult to control without fly-by-wire technology.

**install** /ɪnˈstəl/ verb to put in position, connect and make ready for use Most carburettors are installed in a warm position to help against icing. Installed battery a battery in position in the aircraft

**installation** /ɪnˈstæləʃ(ə)n/ noun 1. the act of putting equipment or devices into position and connecting them for use The installation of the computer took three hours. 2. equipment or devices which are installed In some auxiliary-power-unit installations the air intake area is protected against ice formation by bleeding a supply of hot air from the compressor over the intake surfaces.

**instance** /ɪnˈstəns/ noun an example which is used to provide evidence of something Failure to check fuel levels before take-off is an instance of bad airmanship. For instance e.g.

**instant** /ɪnˈstænt/ adjective immediate, happening immediately a very short period of time The pilot has to act in an instant to counteract the severe downdraughts of a microburst.

**instinctive** /ɪnˈstɪŋktɪv/ adjective natural, rather than thought-out In most modern light aircraft, use of the trim wheel is instinctive, i.e. forwards for nose down and backwards for nose up.

**instruct** /ɪnˈstrʌkt/ verb to give information or knowledge, usually in a formal setting such as a lesson or briefing The safety officer instructs employees on the use of the breathing equipment. The training captain instructs trainee pilots in the simulator.

**instruction** /ɪnˈstrækʃ(ə)n/ noun 1. the act of giving information or knowledge, usually in a formal setting such as a lesson or briefing The safety officer instructs employees on the use of the breathing equipment. The training captain instructs trainee pilots in the simulator. 2. information on how something should be operated or used You must follow the instructions.

**instruction manual** /ɪnˈstrækʃ(ə)nˌmənʃʊəl/ noun a book containing information on how something should be operated or used

**instructor** /ɪnˈstræktraɪəl/ noun a person who gives information or knowledge, usually in a formal setting such as a lesson or briefing

**instrument** /ɪnˈstrɪment/ noun a device for recording, measuring or controlling, especially functioning as part of a control system Airspeed is given
on an instrument called the airspeed indicator.

**instrument approach procedure** /ˈɪnstrəˌmɛnt əˈprəʊk/ noun a set of procedures which a pilot must follow when approaching an airport under **instrument flight rules**

**instrumentation** /ˌɪnstrəˌmɛntˈeɪʃən/ noun a set of specialised instruments on an aircraft. Instrumentation in some basic light aircraft is restricted to a few instruments only. Some modern light aircraft have very sophisticated instrumentation.

**instrument error** /ˈɪnstrəˌmɛnt ɪˈrə/ noun the difference between indicated instrument value and true value

**instrument flight rules** /ˈɪnstrəˌmɛnt ˈflaɪt ˈrʌlz/ plural noun regulations which must be followed when weather conditions do not meet the minima for visual flight. The flight from Manchester to Prestwick was conducted under instrument flight rules. Abbreviation IFR

**instrument flying** /ˈɪnstrəˌmɛntˈflɪŋ/ noun flying using no references other than the flight instruments. Some conditions require instrument flying. When in cloud, instrument flying is required. Abbreviation IF

**instrument landing** /ˈɪnstrəˌmɛntˈlændɪŋ/ noun the landing of an aircraft when a pilot is relying on information obtained from instruments rather than from what can be seen outside the aircraft.

**instrument landing system** /ˌɪnstrəˌmɛntˈlændɪŋˈsɪstəm/ noun aids for an instrument landing approach to an airfield, consisting of a localiser, glide slope, marker beacons and approach lights. The instrument landing system provides both horizontal and vertical guidance to aircraft approaching a runway. Abbreviation ILS

COMMENT: The ILS is the most used precision approach system in the world.

**instrument meteorological conditions** /ˌɪnstrəˌmɛnt ˌmiːtəˈrɒlədʒɪkˌkəndɪʃənz/ plural noun meteorological conditions of visibility and distance from cloud ceiling which are less than those for visual meteorological conditions. Abbreviation IMC

**instrument rating** /ˈɪnstrəˌmɛntˈreɪtɪŋ/ noun an additional qualification added to a licence, such as PPL, allowing a pilot to fly in instrument meteorological conditions. He gained his instrument rating in 1992. Abbreviation IR

COMMENT: An instrument rating is required for operating in clouds or when the ceiling and visibility are less than those required for flight under visual flight rules (VFR).

**insufficient** /ɪnˈsʌfɪʃnt/ adjective not enough. Insufficient height resulted in the pilot landing short of the runway.

**insulate** /ˈɪnsjʊleɪt/ verb 1. to prevent the passing of heat, cold or sound into or out of an area. 2. to prevent the passing of electricity to where it is not required, especially by using a non-conducting material. Bus bars are insulated from the main structure and are normally provided with some form of protective covering.

**insulating** /ˈɪnsjʊleɪtɪŋ/ adjective preventing the unwanted passage of heat, cold, sound or electricity

**insulating tape** /ˈɪnsjʊleɪtɪŋˈteɪp/ noun special adhesive tape which is used to insulate electrical wires. Insulating tape was used to prevent the electrical wires from touching.

**insulation** /ˈɪnsjʊleɪʃən/ noun an act of or state of preventing the passing of heat, cold, sound or electricity from one area to another. For continuous supersonic flight, fuel tank insulation is necessary to reduce the effect of kinetic heating.

**insulator** /ˈɪnsjʊleɪtər/ noun a substance which will insulate, especially which will not conduct electricity. Wood is a good insulator.

**intake** /ˈɪnteɪk/ noun an opening through which a fluid is allowed into a container or tube
intake guide vane /ˈɪntek ɡaɪd/ noun a device to direct the flow of air at the air-intake
intake lip /ˈɪntek lɪp/ noun the rim or edge of the air intake of a jet engine o As sonic speed is approached, the efficiency of the intake begins to fall because of shock waves at the intake lip.

intake temperature gauge /ˈɪntek ˈtempərətʃər ɡeɪdʒ/ noun an instrument to indicate the temperature of air entering an engine

integral /ˈɪntəgrəl/ adjective which completes the whole or which belongs to a whole o Meteorology is an integral part of a flying training course.

integrity /ɪnˈterɪgrɪtɪ/ noun the state of being complete and in good working condition o The engine fire warning system is checked to test its integrity.

intend /ɪnˈtend/ verb to have a particular plan, aim or purpose o A battery is intended to supply only limited amounts of power.

intended track desired course of flight

intense /ɪnˈtens/ adjective 1. extreme in amount o intense heat very high heat o intense wind very strong wind 2. intense concentration very hard or deep concentration

intensity /ɪnˈtensɪtɪ/ noun the amount or strength of heat, light, radiation o Surface air temperatures depend mostly on the intensity and duration of solar radiation.

intention /ɪnˈtɛnʃən/ noun the course of action one means or plans to follow o It is not the intention of this chapter to give a detailed description of world weather. o Our intention is to provide safe, cost-effective flying.

inter- /ɪntə/ prefix between

interact /ɪntəˈrækt/ verb to act on each other o Angle of attack and the profile of the wing section interact to produce lift.

intercept /ɪntəˈsɛpt/ verb to stop or interrupt the intended path of something o When a radio transmission is made from a moving platform, there will be a shift in frequency between the transmitted and intercepted radio signals.

interconnect /ɪntəˈkəŋkt/ verb to connect together o The fire extinguishers for each engine are interconnected, so allowing two extinguishers to be used on either engine.

inter-crew /ɪntəˈkruː/ adjective o inter-crew communications communications between members of the crew.

interfere /ɪntəˈfɪə/ verb to interfere with to get in the way of something or come between things and thus create a problem o An engine intake close to another surface, such as the fuselage tail section, must be separated from that surface so that the slower boundary layer air does not interfere with the regular intake flow.

interference /ɪntəˈfɪərəns/ noun the prevention of reception of a clear radio signal o Some equipment, such as generators and ignition systems, will cause unwanted radio frequency interference.

interlock /ɪntəˈlɑːk/ noun a series of switches and/or relays o Interlocks operate in a specific sequence to ensure satisfactory engagement of the autopi lot.

interlock /ɪntəˈlɑːk/ verb to connect together parts of a mechanism, so that the movement or operation of individual parts affects each other o The two parts interlock to create a solid structure.

intermediate /ɪntəˈmɪdiət/ adjective 1. in a position between two others o An intermediate level language student a second language learner who has reached a level between elementary and advanced level

intermediate approach /ɪntəˈmɪdiət əˈprəʊf/ noun the part
of the approach from arriving at the first navigational fix to the beginning of the final approach.

**intermediate frequency** (international) noun the frequency in a radio receiver to which the incoming received signal is transformed. Abbreviation IF

**intermittent** (international) adjective stopping and starting at intervals. The cycle of induction, compression, combustion and exhaust in the piston engine is intermittent, whereas in the gas turbine, each process is continuous.

**internal** (international) adjective referring to the inside or interior of something. internal damage Opposite external

**internal combustion engine** (international) noun a type of engine in which the fuel is burnt within the cylinders of the engine, as opposed to the steam engine.

**international** (international) adjective between countries. international call a telephone call between people in two different countries.

**International Air Transport Association** (international) noun an international organisation that supervises and coordinates air transport and to which most major airlines belong. Abbreviation IATA

**International Calling Frequency** (international) noun an international organisation that supervises and coordinates air transport and to which most major airlines belong.

**International Civil Aviation Organization** (international) noun an organisation established in 1947 by governments that "agreed on particular principles and arrangements in order that international civil aviation may be developed in a safe and orderly manner...". Air navigation obstructions in the United Kingdom are shown on ICAO aeronautical charts. Abbreviation ICAO

**COMMENT:** ICAO is based in Montreal (Canada).

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**international standard atmosphere** (international) noun an internationally agreed unit of pressure used in the calibration of instruments and the measurement of aircraft performance. For en route weather the datum chosen is international standard atmosphere at mean sea level. Abbreviation ISA

**interphone** (international) noun an internal telephone communications system within an aircraft that enables members of the crew to speak to one another

**interpolation** (international) noun the estimation of a middle value by reference to known values each side. Spot temperatures at positions other than those printed are obtained by interpolation.

**interpret** (international) verb to understand something presented in code or symbolic form. Aircrew must be able to interpret information printed on a contour chart.

**interpretation** (international) noun an understanding of something presented in code or symbolic form. Synoptic charts require interpretation in order to understand the information given.

**interrogate** (international) verb to transmit SSR or ATC signals to activate a transponder. Secondary surveillance radar interrogates the aircraft equipment which responds with identification and height information.

**interrogation** (international) noun the transmission of a SSR or ATC signal to activate a transponder. A transponder replies to interrogation by passing a four-digit code.

**interrogator** (international) noun a ground-based surveillance radar beacon transmitter/receiver. The questioner, better known as the interrogator, is fitted on the ground, while the responder, also known as the transponder, is an airborne installation.

**interrupt** (international) verb to break the continuity of something. The conversation was interrupted by a telephone call. In the northern hemisphere, the westerly flow of air is
interruption /ɪntɜːrˈtjuːpʃən/ noun a break in the continuity of something. Because of the summer holiday, there was an interruption in the flying training course.

intersect /ɪntɜːsɛkt/ verb to cut across each other. The aircraft came to a stop at the intersection between runways 09 and 16. The intersection of the drift line and the wind vector gives the drift point.

intertropical convergence zone /ˌɪntəˈtrɒpɪkl kənˈvɜːrʒəns/ noun the boundary between the trade winds and tropical air masses from the northern and southern hemispheres. The intertropical convergence zone is the zone in which the trade winds from the two hemispheres approach each other. Abbreviation ITCZ

interval /ˈɪntəvl/ noun 1. the amount of space between places or points. The intervals at which contours are drawn depends on the scale of the chart and this interval, known as the vertical interval, is noted on the chart. 2. the period of time between two events. A precise interval is essential to obtain correct ignition timing on all cylinders.

introduction /ɪntrəˈdʌkʃən/ noun 1. something written which comes at the beginning of a report, chapter, etc., or something spoken which comes at the beginning of a talk. In his introduction, the chief executive praised the efforts of the workforce over the previous 12 months. 2. the act of bringing into use. The introduction of fly-by-wire technology has made the pilot’s task easier.

inverse /ˈɪnvərs/ adjective reversed in order or effect. There is an inverse relationship between altitude and temperature, i.e. temperature decreases as altitude increases.

inversion /ɪnˈvɜːʃən/ noun 1. an atmospheric phenomenon where cold air is nearer the ground than warm air. Smog is smoke or pollution trapped on the surface by an inversion of temperature with little or no wind. 2. turning something upside down. Inversion of the aircraft in flight may result in fuel stoppage.

inversion layer /ɪnˈvɜːʃən ˈlɛər/ noun a layer of the atmosphere in which the temperature increases as altitude increases.

invert /ɪnˈvɜːrt/ verb to turn upside down. A glass tube is sealed at one end, filled with mercury and then inverted so that the open end is immersed in a bowl containing mercury.

investigate /ɪnˈvestɪɡət/ verb to examine or look into something in great detail. If the starter engaged light stays on after starting, it means that power is still connected to the starter and, if it is still on after 30 seconds, the cause must be investigated.

investigation /ɪnˈvestɪɡəʃən/ noun a detailed inquiry or close examination of a matter. Accident investigation process of discovering the cause of accidents.

invisible /ɪnˈvɪzəbl/ adjective impossible to see. Oxygen is an invisible gas.

involve /ɪnˈvɒlv/ verb to include. In large transport aircraft, because of the distance and numbers of people involved, effective and rapid communications are required between flight crew and cabin crew and between cabin crew and passengers. Two aircraft were involved in an accident.

involved /ɪnˈvɒlvɪd/ adjective overcomplex, difficult. The procedure for
replacing a lost passport is very involved.
inward /ˈɪnwaːd/ adjective directed to or moving towards the inside or interior.
To provide protection against smoke and other harmful gases, a flow of 100% oxygen is supplied at a positive pressure to avoid any inward leakage of poisonous gases at the mask.
inwards /ˈɪnwaːdz/ adverb towards the inside or the interior.
The door opens inwards.
Opposite outwards.
ion /ˈaɪən/ noun an atom or a group of atoms that has obtained an electric charge by gaining or losing one or more electrons. Negative ion. Positive ion. Ultra-violet light from the sun can cause electrons to become separated from their parent atoms of the gases in the atmosphere, the atoms left with resultant positive charges being known as ions.
ionisation /ˌaɪənaɪˈzeɪʃən/ noun the process of producing ions by heat or radiation. The intensity of ionisation depends on the strength of the ultra-violet radiation and the density of the air.
ionospheric /ˌaɪənəˈsferɪk/ adjective referring to the ionosphere.
ionospheric attenuation /ˌaɪənəˈsfərɪk əˈtenjuːeɪʃən/ noun loss of signal strength to the ionosphere.
ionospheric refraction /ˌaɪənəˈsfərɪk ɪnˈtræktʃən/ noun a change in direction as the wave passes through an ionised layer.
I/R abbreviation instrument rating.
irregular /ɪrˈɛgjjuələr/ adjective not regular. Pilots of long-haul flights are subject to an irregular sleep pattern.
irrespective /ɪrˈspɛktɪv/ adjective taking no account of, regardless of. Rescue flights continue their work irrespective of the weather conditions.
ISA /ˈɪsaɪə/ abbreviation international standard atmosphere.
isobar /ˌaisəˈbəʊrəʊ/ noun a line on a weather chart joining points of equal atmospheric pressure. Isobars are analogous to contour lines.
isobaric /ˌaisəˈbærɪk/ adjective referring to or showing isobars. Isobaric charts.
isolate /ˌaisəˈleɪt/ verb to separate something from other things or somebody from other people. The low-pressure fuel cock isolates the airframe fuel system from the engine fuel system to enable maintenance and engine removals to be carried out.
isolated /ˌaisəˈleɪtɪd/ adjective separate. Isolated rain showers well spaced out rain showers.
isolation /ˌaisəˈleɪʃən/ noun the state of being separated from something or somebody. Isolation of the aircraft’s passengers and crew from the reduced atmospheric pressure at altitude is achieved by pressurisation of the cabin.
isotach /ˌaisəˈteɪʃən/ noun a line of equal wind speed on charts (NOTE: Wind speed is normally given in the form of isotachs.)
isotherm /ˌaisəˈθɜːm/ noun a line of equal temperature on charts (NOTE: Ascent of stable air over high ground may result in a lowering of the 0°C isotherm.)
issue /ˈɪʃjuː/ noun a number or copy. The article was in last month’s issue of the magazine.
The magazine is issued monthly.
issue 1. to give out. The captain issued the evacuation command.
2. to publish. The magazine is issued monthly.
3. to give out, to grant. The Civil Aviation Authority issue licences.
ITCZ abbreviation intertropical convergence zone.
item /ˈaɪtəm/ noun a single article, unit in a collection, on a list, etc.
Before practising stalls, the pilot should secure all loose items in the cockpit.
J  symbol joule
JAA  abbreviation Joint Aviation Authorities
jack /dʒæk/ noun a powered device to move heavy components, such as control surfaces of large aircraft
jacket /dʒækɪt/ noun 1. a short coat with long sleeves worn with trousers or skirt 2. an outer covering or casing Liquid cooling of a piston engine is achieved by circulating a liquid around the cylinder barrels, through a passage formed by a jacket on the outside.
jam /dʒæm/ verb to cause moving parts to become locked and unable to be moved a jammed door a door which has become fixed and unmovable The investigation revealed that the accident had been caused by the controls being jammed due to a spanner caught in the control cables.
JAR  abbreviation Joint Aviation Requirements
jato /dʒætəʊ/ noun an auxiliary jet or rocket designed to aid the combined thrust of aircraft jet engines during take-off
jeopardise /dʒəˈpɒdɪzaɪz, ˌdʒɛpəˈraɪz/jeopardize verb to put in doubt or danger Injury to a crew member will seriously jeopardise the successful evacuation of the aircraft.
Jeppesen chart /dʒɪpˈpæs(ə)n tʃɑrt/ noun a type of aeronautical chart produced by a US company and widely used in aviation
jet /dʒet/ noun 1. a strong fast stream of fluid forced out of an opening a jet of water from a pipe 2. a type of engine used to power modern aircraft which takes in air at the front, mixes it with fuel, burns the mixture and the resulting expansion of gases provides thrust. The turbo jet engine was invented by Frank Whittle in 1941. 3. a type of aircraft which has jet engines The de Havilland Comet was the first commercial jet.
jetbridge /dʒetˈbrɪdʒ/ noun same as loading bridge
jet fighter /dʒet ,ˈfaɪtər/ noun a fighter plane that is powered by a jet engine or engines
jet lag /dʒet ˈläɡ/ noun the temporary disturbance of body rhythms such as sleep and eating habits, caused by high-speed travel across several time zones When I fly to Canada, it always takes me a couple of days to recover from jet lag.
jetliner /dʒetˈlɪnər/ noun a large passenger aircraft powered by jet engines
jet plane /dʒet plɛn/ noun an aircraft powered by jet engines
jet-propelled aircraft /,dʒet prəˌpɛld ˈɛkˌkrɛft/ noun aircraft powered by jet engines
jet propulsion /,dʒet prəˌpəˈpəlʃ(ə)n/ noun jet power which provides thrust for an aircraft The first known example of jet propulsion was when Hero, a Greek engineer, made a machine as a toy in the year 120 BC.
jet stream /dʒet ˈstrɛm/ noun 1. a band of strong winds at high altitude The occurrence of the equatorial jet stream is due to a temperature gradient with colder air to the south. 2. the flow of gases from a jet engine
The undercarriage failed to retract and the captain had to jettison the fuel over the sea before landing the aircraft.

the captain had to jettison the fuel over the sea before landing the aircraft.

Fuselage frame rings are formed with only one joint.

a body, consisting of European representatives, set up to control and regulate aspects of civil aviation in Europe. The Joint Aviation Authorities is an arrangement between European countries which has developed since the 1970s. Abbreviation JAA

COMMENT: The Joint Aviation Authorities currently has 37 member states, including all the countries of the European Union.

a JAA requirement concerning design, manufacture, maintenance and operation of aircraft. Abbreviation JAR (NOTE: JARs of relevance to maintenance staff are JAR-145, JAR-OPS 1 and JAR-OPS 3.)

an International System unit of electrical, mechanical, and thermal energy. Ignition units are measured in joules (1 joule = 1 watt per second). (NOTE: It is usually written J with figures: 25 J.)

same as jumbo jet (informal)
a large wide-bodied aircraft capable of carrying several hundred passengers

a jet aircraft with fixed wings that can take off and lands vertically

a place where two things meet. The junction of two wires can be connected together

an electrical unit where a number of wires can be connected together
K

K symbol kelvin  
katabatic /'kætəbæk/ adjective referring to a cold flow of air travelling down hillsides or mountainsides. Due to katabatic effects, cold air flows downwards and accumulates over low ground. Compare anabatic  
katabatic wind /'kætəbæk wınd/ noun a wind which occurs when the air in contact with the slope of a hill is cooled to a temperature lower than that in the free atmosphere, causing it to sink. Compare anabatic wind  
kelvin /'kelvın/ noun the base SI unit of measurement of thermodynamic temperature. Symbol K (NOTE: Temperatures are shown in kelvin without a degree sign: 20K. Note also that 0°C is equal to 273.15K.)  
kerosene /'kerəsı:n/, kerosine noun a thin fuel oil made from petroleum. Kerosene will only burn efficiently at, or close to, a ratio of 15:1.  
Kevlar /'kevlər/ noun a trademark for a light and very strong composite material. Kevlar and carbon fibre account for a large percentage of a modern jet airliner’s structure.  
key /ki/ noun a piece of metal used to open a lock  
kg symbol kilogram  
kHz symbol kilohertz  
kick-back /'kɪkbɛk/ noun the tendency of the engine to suddenly reverse the rotation of the propeller momentarily when being started. On most modern engines the spark is retarded to top-dead-centre, to ensure easier starting and prevent kick-back.
aileron are moved. 3. a round button such as on a receiver. Turn the knob to increase the volume.

knot /nɒt/ noun a unit of speed equal to one nautical mile per hour, approximately 1.85 kilometres or 1.15 statute miles per hour. Abbreviation kt (NOTE: Wind speeds in aviation are usually given in knots.)

COMMENT: American light aircraft manufactured prior to 1976 had airspeed indicators marked in statute miles per hour. Knot means ‘nautical miles per hour’. It is therefore incorrect to say ‘knots per hour’.

knowledge /ˈnɒlɪdʒ/ noun familiarity, awareness or understanding gained through experience or study. A knowledge of the factors which affect surface temperatures will contribute a great deal to the understanding of meteorology.

kt abbreviation knot
label /ˈleɪbl/ noun a small piece of paper or cloth attached to an article with details of its owner, contents, use, destination, etc. • **Hydraulic tubing has a label with the word HYDRAULIC.** • **verb** 1. to identify by using a label • **Parts are labelled with the manufacturer’s name.** 2. to add identifying words and numbers to a diagram • **There is a standard way of labelling the navigation vector.**

lack /læk/ noun the absence of something or a need for something • **The engine stopped because of a lack of fuel.**

lag /læg/ noun a delay, especially the time interval between an input and the resultant output • **There is a time lag between the piston moving down and the mixture flowing into the cylinder.** • **jet lag**

Lambert’s projection /ˈlæmbərts prədʒəkʃən/ a map projection of the earth based around two standard parallels of latitude. • **Mercator’s projection**

laminate /ˈlæmənət/ noun a sheet of man-made material made up of bonded layers • **Direction of the fibres and types of cloth used in the laminate are all very important factors.** • **verb** /ˈlæmənɪt/ to make by using bonded layers of material • **laminated wind-screens**

lamp /læmp/ noun a small light • **warning lamp** a small light, often red, which informs of a possible danger by lighting up • **The switch is connected to a warning lamp on the instrument panel which will illuminate if the oil pressure falls below an acceptable minimum.**

land /lænd/ noun solid ground, as opposed to the sea • **a large land mass such as Greenland** • **verb** 1. to set an aircraft onto the ground or another surface such as ice or water, after a flight • **to force land the aircraft** to land the aircraft when it can no longer be kept in the air for any particular reason 2. to arrive on the ground after a flight • **Flight BA321 landed at London Heathrow at 1030 hours.** • **crash-land**. Opposite **take off**

landing /ˈlændɪŋ/ noun the act of setting an aircraft onto the ground or another surface such as ice or water after flight • **Take-off and landing are normally made into wind in order to reduce the length of the take-off and landing run.** • **In order to achieve a safe landing in a cross wind, the correct techniques must be used.**

landing beacon /ˈlændɪŋ ˈbiːkən/ noun a radio transmitter at an airfield that sends a beam to guide aircraft that are landing

landing beam /ˈlændɪŋ ˈbiːm/ noun a radio beam from a beacon at a landing field that helps incoming aircraft to make a landing

landing charges /ˈlændɪŋ,ˈlændɪŋ ˈtʃɑːz/ plural noun money paid to an airport authority by an operator or private pilot for landing an aircraft

landing field /ˈlændɪŋ faɪld/ noun a place where aircraft can land and take off

landing gear /ˈlændɪŋ ɡɛə/ noun same as undercarriage

landing pad /ˈlændɪŋ ˈpæd/ noun same as helipad
landing run /ˈlandɪŋ rʌn/ noun the distance on the runway from the touchdown point to the stopping point or taxing point

landing speed /ˈlandɪŋ spɪd/ noun the lowest speed at which an aircraft must be flying in order to land safely

landing strip /ˈlandɪŋ strɪp/ noun a specially prepared area of land for an aircraft to land on

landing weight /ˈlandɪŋ wეɪt/ noun the weight of an aircraft when it lands, which is made up of its empty weight, the weight of its payload, and the weight of its remaining fuel

landmark /ˈlændmɑrk/ noun something on the ground which enables the pilot to know where he/she is, e.g. a noticeable building, bridge, coastal feature, etc.

lateral /ˈlætərəl/ adjective referring to

landing run

lateral axis /ˈlætərəl ˈæksɪs/ noun the axis of the aircraft from wing tip to wing tip about which the aircraft pitches up and down. • axis, pitch

latitude /ˈlætɪtjuːd/ noun the angular distance north or south of the Earth’s equator, measured in degrees, minutes and seconds, along a meridian, as on a map or chart, etc. • Parallels of latitude are imaginary circles on the surface of the Earth, their planes being parallel to the plane of the equator. • The centre of London is latitude 51°30’N, longitude 0°5’W. Compare longitude

latter /ˈlætər/ adjective referring to something coming at the end or finish • the latter part of the take-off run the part of the take-off run immediately before the aircraft leaves the ground • noun the second of two things mentioned earlier. Opposite former • of the

laser ring gyro /ˈlɛzə rɪŋ ˈdʒæɪrəʊ/ noun an instrument that uses beams of laser light in a closed circuit to detect whether something is level or not

last /lɑːst/ adjective coming or placed after all the others • verb 1. to continue for a period of time • A gust is a sudden increase in wind speed above the average speed lasting only a few seconds. 2. to stay in good or usable condition • A piston engine lasts longer if it is handled carefully and serviced regularly. • the last chapter 1. the final chapter in a book. 2. the chapter before the one being read

lateral heat /ˈlætərəl hɛt/ noun heat taken in or given out when a solid changes into a liquid or vapour, or when a liquid changes into a vapour at a constant temperature and pressure • latent heat of fusion the quantity of heat required to convert ice, at its melting point, into liquid at the same temperature • latent heat of vaporization the quantity of heat required to convert liquid to vapour at the same temperature • latent heat of sublimation the quantity of heat required to convert ice to vapour at the same temperature

lateral /ˈlætərəl/ adjective referring to the side • Drift is the lateral movement of the aircraft caused by the wind.

landing strip

lateral axis

landing run

latter

laser ring gyro

latency

laser light in a closed circuit to detect whether something is level or not

landing run

laser ring gyro

last

laser ring gyro

latitude
launch

Airbus A320 and A340, the latter is the larger aircraft the A340 is the larger of the two

launch /ləntʃ/ noun a small boat often used to transport people from a larger boat or ship to the shore ● verb 1. to slide or drop a boat into the water to make it ready for use ● While passengers are fitting life jackets, crew will open exits and launch the life rafts. 2. to force something into motion ● to launch a rocket

lavatory /ˈlavətri/ noun same as toilet 2

law /lɔː/ noun 1. a basic principle describing a relationship observed to be unchanging between things while particular conditions are met ● the law of gravity 2. a set of agreed rules ● aviation law

layer /ˈleɪər/ noun 1. one horizontal part ● The lowest layer of the atmosphere is called the troposphere. 2. a thickness of something ● Layers of fluid next to the surface over which it is flowing travels more slowly than layers further from the surface.

layer cloud /ˈleɪər klaʊd/ noun same as stratus

layout /ˈleiətʃər/ noun the way in which things are arranged ● cockpit layout the design of the cockpit and the particular placement of controls, instruments, etc.

LC abbreviation load controller

LCD /el sidˈdiː/ abbreviation liquid crystal display

LDA abbreviation landing distance available

LDR abbreviation landing distance required

lead1 /liːd/ noun a very heavy soft metallic element. Symbol Pb ● lead-free not containing lead ● Low-lead or lead-free fuel is used in most modern piston engines.

lead2 /liːd/ noun 1. an electrical wire or narrow cable ● A lead connects the monitor to the computer. 2. ● to take the lead to take control of a situation ● It is vital in any emergency situation that a crew member should take the lead ● verb 1. to guide or show the way by going first ● In an emergency situation the aircraft commander may lead his passengers to safety. ● In a smoke-filled cabin, floor lighting leads passengers to the emergency exit. 2. to cause ● In winter, the cold conditions often lead to frost and fog. ● Contraction of metal parts and seals can lead to fluid leakage. (NOTE: leading — led)

lead-acid battery /ˈled əsɪd ˈbæt(ə)rɪ/ noun a system of lead plates and dilute sulphuric acid, used as a starter battery or traction battery

leading edge /ˈliːdɪŋ ɛdʒ/ noun the front part of the wing which meets the oncoming air first ● In icing conditions, ice may build up on the leading edges.

leak /liːk/ noun the escape of liquid or gas from a sealed container, or the amount of liquid or gas that has escaped ● Any failure of the aircraft structure may cause a leak of pressurised air which might be very difficult to cure. ● exhaust leak an escape of exhaust gases ● verb to escape from a sealed container ● Fuel may leak from a fuel tank if the drain plug is not seated correctly.

leakage /ˈliːkədʒ/ noun the escape of liquid or gas from a sealed container ● Any internal or external leakage of fuel will cause a reduction in the operating period. (NOTE: Leak is normally used for an individual instance while leakage is used more generally: There is a fuel leak from the central tank; Fuel leakage is a safety hazard.)

lean /liːn/ adjective referring to a mixture in which the ratio of air to fuel is greater than usual ● Moving the mixture control lever aft to the lean position reduces the amount of fuel mixing with the air.

lean mixture /ˈliːn ˈmiːkstʃər/ noun a fuel/air mixture in which the ratio of air to fuel is greater than usual

LED /el iː/ abbreviation light-emitting diode that emits light when current is applied. LEDs are used in cockpit displays. Full form light-emitting diode
The flow of air over and to the lee of hills and mountains may cause particularly severe turbulence. Opposite windward

**leg** /leg/ noun part of a flight pattern that is between two stops, positions, or changes in direction. An airfield traffic pattern is divided into take-off, crosswind leg, downwind leg, base leg and final approach.

...their route was across the States to Canada, Greenland and the North Pole, into Norway, through Europe, back to Iceland, then two long legs across the Atlantic via South Greenland and back to Seattle.‘Pilot’

**length** /lĕŋθ/ noun 1. a measurement along something’s greatest dimension. The length of the aircraft. 2. a piece of something that is normally measured along its greatest dimension. a length of pipe. 3. the extent from beginning to end. the length of a book. 4. extent or duration, the distance between two points in space or time. the length of a briefing. how much time the briefing takes. the length of the working life of components. how long the components last. the length of a flight. the time it takes to complete a flight. The length of the flight meant that there was no time for a meal to be served to the passengers. 2. the distance of the flight in nautical miles or kilometres. The length of the flight is 100nm.

**lengthen** /lĕŋθən/ verb to make long or longer. the mercury column shortens when cooled and, due to expansion, lengthens when heated. Opposite shorten

**lengthwise** /lĕŋθwartz/ adjective, adverb along the length of something. in a lengthwise direction

**lengthy** /lĕŋthi/ adjective. 1. long, extensive. He wrote a lengthy report. 2. long, which lasts for a long time. (NOTE: Lengthy often suggests a meeting or explanation which is longer than necessary and therefore uninteresting.) a lengthy meeting. a long meeting. a lengthy explanation.

**lens** /lenz/ noun a normally round piece of glass with curved surfaces found in microscopes, telescopes, cameras, spectacles, etc.

**lens-shaped cloud** /lens fĕAPT klaʊd, lenticular cloud /len,tık溃疡 /klaʊd/ noun cloud with slightly outwardly-curved upper and lower surfaces.

**lessen** /les(ə)n/ verb to make less. Reverse thrust is used to lessen the loads on brakes and tyres. Clean filters lessen the possibility of blockage.

**letdown** /let daυn/ noun the descent of an aircraft in preparation for landing, before the actual landing approach.

**level** /lev(ə)l/ adjective 1. at the same height or position as something else. In most light aircraft, the aeroplane will be in a climb if the engine cowling is level with the horizon. 2. having a flat, smooth surface. a level runway. a runway without bumps, etc. 3. on a horizontal plane. steady, referring to something with no sudden changes. speak in a level voice. do not raise and lower the sound of your voice. the level tone of an engine. the unchanging sound of an engine. a level head. clear thinking. It is essential that the crew keeps a level head in an emergency. 1. noun. a position along a vertical axis. ground level. reference level. altitude. The tropopause is the level at which the lapse rate ceases to be so important. a high level of knowledge. a position on a scale. an advanced level of study. 3. a relative amount, intensity, or con-
level off 136
centration ◦ an unsafe level of contamination ◦ a reduced level of noise ◦ A gas turbine engine has an extremely low vibration level.
level off /ˈlevəl/ 'f/ verb to start to fly level with the ground after climbing or descending, or make an aircraft do this
lever /ˈliːvər/ noun 1. a device with a rigid bar balanced on a fixed point and used to transmit force, as in raising a weight at one end by pushing down on the other ◦ Push the lever fully up to activate the brake mechanism. ◦ Push the button to release the lever. 2. a handle used to adjust or operate a mechanism ◦ throttle lever ◦ undercarriage selector lever ◦ Feathering is accomplished by moving the pilot’s control lever. ◦ verb to move as with a lever ◦ The door would not open so the emergency services had to lever it open with specialised equipment.
LF abbreviation low frequency
licence /ˈlɛns/ noun a document which is proof of official permission to do or to own something
COMMENT: Each licence has its own specific requirements and privileges. In the UK, one of the fundamental differences between a Private Pilot’s Licence and other types of licence is that the holder of a PPL is not allowed to fly for ‘hire or reward’, i.e. the pilot cannot receive payment for flying.
licence holder /ˈlɛns/ ˈholər/ noun 1. a person who has a licence 2. a leather case, etc., in which to keep the licence document
license /ˈlɛns/ noun US same as licence ◦ verb to give somebody a licence or official permission to do or to own something
lie /laɪ/ verb 1. to be in a flat position, often horizontal ◦ Seat rails are attached to the floor beams and lie level with the flooring. 2. to be situated ◦ Great circles are represented by curves which lie on the polar side of the rhumb line. (NOTE: Care should be taken with the verbs to lie, as defined here: lie – lay – lain; to lie meaning ‘not to tell the truth’: lie – lied – lied and lay, meaning ‘to put down’ as in ‘lay the book on the table’: lay – laid – laid.)
life jacket /ˈlaɪf ˈdʒækɪt/ noun an inflatable device, sometimes resembling a sleeveless jacket, to keep a person afloat in water ◦ Pull down the toggles to inflate the life jacket.
life raft /ˈlaɪf ˈraɪt/ noun a small boat-like vessel for use on an emergency over water
life vest /ˈlaɪf ˈvest/ noun same as life jacket ◦ You will find a life vest under your seat.
lift /laɪft/ noun 1. a component of the total aerodynamic force acting on an aeroplane which causes an aeroplane to fly ◦ In level flight, a lift force equal to the weight must be produced. ◦ The pilot can achieve maximum lift by pulling hard back on the controls. 2. an electrically operated machine for moving people or goods between the floors of a building (NOTE: The US English is elevator.) ◦ verb to move to a higher position ◦ A foot-pound is the ability to lift a one pound weight a distance of one foot.
COMMENT: Bernoulli’s principle states that if the speed of a fluid increases, its pressure decreases; if its speed decreases, its pressure increases. Wings are shaped so that the high-speed flow of air that passes over the curved upper surface results in a decrease in pressure. Lift is created because of the pressure differential between upper and lower surfaces of the wing. Lift is also created because the angle of attack allows the airflow to strike the underside of the wing. Daniel Bernoulli (1700–82) was a Swiss scientist.
light /laɪt/ noun 1. brightness produced by the sun, the moon, a lamp, etc. 2. electromagnetic radiation which can be sensed by the eyes ◦ artificial light light made by using electrical, gas, etc., power 3. a source of light such as a lamp ◦ Switch off the navigation lights. ◦ adjective 1. without much weight, not heavy ◦ Aluminium is a light metal. 2. of little force or requiring little force ◦ a light wind a gentle wind ◦ light controls flying controls which do not need much pilot effort to move them 3. of lit-
light aircraft / laɪt ˈɛəkrɑːft/ noun a small, single engine aircraft generally for private not commercial use

lighting /ˈlaɪtnɪŋ/ noun lights or a system of lights |
Cabin lighting is switched off for take-off and initial climb |
Emergency floor lighting guides passengers to the emergency exits.

lightning /ˈlaɪtnɪŋ/ noun a powerful and sudden electrical discharge from a cloud |
Lightning is the most visible indication of thunderstorm activity.

lightning activity /ˈlaɪtnɪŋ əkˈtɪvəti/ noun a period of time when there are a lot of lightning flashes

lightning strike /ˈlaɪtnɪŋ straɪk/ noun the hitting of something by a discharge of lightning

light plane /ˈlaɪt ˈplɛn/ noun US same as light aircraft

likely /ˈlaɪkli/ adjective probable |
rain is likely rain will probably fall |
icing is likely to occur in cumulonimbus clouds icing is often a problem if flying in cumulonimbus clouds.

limit /ˈlɪmɪt/ noun a point or line past which something should not go |
There is a time limit of one hour for the examination. |
The minimum age limit for holding a PPL in the UK is 17. |
the upper limit of cloud the highest point at which there is cloud |
verb to restrict or to prevent from going past a particular point |
The amount of cabin baggage is limited to one bag per passenger.

limitation /ˈlɪmɪteɪʃ(ə)n/ noun the act of limiting or the state of being limited |
Limitation of the maximum engine rpm to a little above maximum engine cruise rpm prevents compressor stall at the higher rpm range.

line /laɪn/ noun 1. a thin continuous mark as made by a pencil, pen, etc. or printed |
Draw a line from point A to point B. |
2. a real or imaginary mark placed in relation to points of reference |
An isobar is a line joining points of equal pressure. |
3. a long row of people, etc. |
4. a line of people |
5. a line of cumulus clouds |
6. a row of written or printed words |
Look at line 4 on page 26. |
5. a telephone connection to another telephone or system |
6. Dial 9 to get an outside line.

Cabin lighting is |
opened or illuminated |
Emergency floor lighting |
Lighting is |
the maximum visual |
Indication of thunderstorm activity.

light aircraft |
lightning |
lightning activity |
lightning strike |
light plane |
likely |
limit |
limitation |
line.

link /lɪŋk/ noun 1. a connection |
Light aircraft can be steered while taxiing via a direct link from rudder pedals to nosewheel. |
2. a relationship |
There is a link between alcohol abuse and pilot error resulting in accidents. |
verb 1. to make a connection, to join |
The connecting rod links the piston to the crankshaft. |
2. to establish a relationship between two situations |
They link alcohol abuse and pilot error.
linkage 138

**linkage** /lɪŋkɪd/ noun a system or series of mechanical connections such as rods, levers, springs, etc. ○ throttle linkage ○ rudder linkage ○ The linkage from the control column to the control surfaces should allow full and free movement.

**liquid** /ˈlɪkwɪd/ adjective having a consistency like that of water ○ *Liquid oxygen is stored in cylinders.* ■ noun a substance with a consistency like water ○ Water is a liquid, ice is a solid.

**liquid crystal display** /ˈlɪkwɪd ,krɪst(əl) dɪsˈpleɪ/ noun liquid crystals that reflect light when a voltage is applied, used in many watch, calculator and digital displays. Abbreviation LCD

**liquid fire** /ˈlɪkwɪd ˈfəʊr/ noun oil or petrol fire

**list** /lɪst/ noun a series of names, words, things to do, etc., arranged one after the other in a vertical column ■ verb to write a series of names, words, etc. one after the other in a vertical column ○ List the advantages of a stressed-skin construction.

**liter** /ˈlɪtər/ noun US same as litre

**lithium** /ˌlɪθiəm/ noun a soft silvery metallic element, the lightest known metal, often used in batteries ○ an alloy of aluminium and lithium

**litmus** /ˈlɪtməs/ noun a substance which turns red in acid, and blue in alkali

**litmus paper** /ˈlɪtməs ˈpiːpər/ noun small piece of paper impregnated with litmus to test for acidity or alkalinity

**litre** /ˈlɪtr/ noun the volume of one kilogram of water at 4°C (= 1,000cc or 1.76 pints) (NOTE: It is written l after a figure: 10l; also written liter in US English.)

**live** /lɪv/ adjective carrying electricity ○ live wire

**livery** /ˈlɪvəri/ noun the colour scheme and markings on the outside of an aircraft that identify it as belonging to a particular airline

**LMT** abbreviation local mean time

**load** /ləʊd/ noun 1. the weight or mass which is supported ○ *The load on the undercarriage decreases as lift increases and, when the aircraft rises into the air, the aircraft is supported by the wings.* ○ load bearing supporting some weight 2. a force which a structure is subjected to when resisting externally applied forces ○ *The load on the control column is increased when the aircraft is flown out of trim.* 3. something that is carried in the aircraft ○ fuel load = passenger load the number of passengers on board 4. the power output of a generator or power plant 5. the resistance of a device or of a line to which electrical power is provided ■ verb 1. to put something into a container, often for the purpose of transportation ○ *The aircraft is loaded with fuel before take-off.* 2. to transfer data from disk into a computer main memory ○ She loaded the software onto the computer.

**load-bearing structure** /ˈləʊd ,bɛrɪŋ ˈstræktʃər/ noun a structure which supports the weight of the aircraft in flight or on the ground

**load controller** /ˈləʊd kan,ˈtraʊlər/ noun a device which monitors the output of a generator

**load factor** /ləʊd ,ˈfækta/ noun the stress applied to a structure as a multiple of stress applied in 1g flight ○ The higher the angle of bank, the greater the load factor.

**COMMENT:** In straight and level, unaccelerated flight, the load factor is 1. When an aircraft turns or pulls up out of a dive, the load factor increases. An aircraft in a level turn at a bank angle of 60 degrees has a load factor of 2. In such a turn, the aircraft’s structure must support twice the aircraft’s weight.

**loading** /ləʊdɪŋ/ noun 1. the act or process of adding a load to an aircraft ○ *Loading is in progress* passengers, baggage, freight, etc., are being put on the aircraft 2. the total aircraft weight or mass divided by wing area ○ Inertia switches operate automatically when a particular g (acceleration due to Earth’s gravity) loading occurs. 3. a force or stress acting on an object ○ centrifugal loading centrifugal force acting on something ○ Centrifugal loading
moves the valve towards the closed position. 4. the act of transferring data from disk to memory. Loading can be a long process.

loading bridge /ˈlɑʊdɪŋ braid/ noun a covered walkway from an airport departure gate that connects to the door of an aircraft, used by passengers and crew getting on and off the aircraft.

load manifest /ˈlɑʊd ,mænɪfəst/ noun a detailed list of the cargo on a flight. Also called load sheet.

loadmaster /ˈlaʊdmeɪstə/ noun the person who is in charge of the work of loading cargo onto a military or commercial transport aircraft.

load sheet /ˈlɑʊd ʃiːt/ noun same as load manifest.

lobe /ləʊb/ noun one of two, four or more sub-beams that form a directional radar beam. Any system employing beam sharpening is vulnerable to side lobe generation at the transmitter.

LOC abbreviation localiser.

local /ˈləʊk(ə)l/ adjective not broad or widespread. ≠ local meteorological conditions weather conditions in the restricted area of a particular place.

local authority /ˈləʊk(ə)l əˈthɔrəti/ noun a government body responsible for the various services of an area.

localised /ˈləʊkəlaɪzd/, localized adjective restricted in area or influence. ≠ a localized fire a fire which has not spread.

localiser /ˈləʊkəlɪzaɪər/, localizer noun a component of the instrument landing system that provides horizontal course guidance to the runway. If, during the approach, the aircraft deviates beyond the normal ILS glideslope and/or localiser limits, the flight crew are alerted. Abbreviation LOC.

locality /ˈləʊkəlɪti/ noun a small geographical area. ≠ The highest point in a locality is marked by a dot with the elevation marked alongside.

local mean time /ˈləʊk(ə)l ˈmiːn ,tæm/ noun the time according to the mean sun. Abbreviation LMT.
logical /ˈlɒndʒɪkəl/ adjective referring to something which, because of previous experience or knowledge, is natural or expected. Pre-flight checks on light aircraft are made in a logical manner from one side of the aircraft to the other.

longeron /ˈlɒndʒərən/ noun the main structural part of an aircraft fuselage extending from nose to tail. Long-eron's are normally used in aircraft which require longitudinal strength for holds underneath the floor.

long-haul /ˈlɒŋ ˈhɔːl/ adjective travelling over a long distance. Crew flying long-haul routes have to adapt to time changes. Opposite: short-haul

longitude /ˈlɒŋɡt jʊdʒəl/ noun the angular distance on the Earth's surface, measured east or west from the prime meridian at Greenwich, UK, to the meridian passing through a position, expressed in degrees, minutes, and seconds. The centre of London is latitude 51°30'N, longitude 0°5'W. Compare latitude

longitudinal /ˈlɒŋɡtˈjuːdʒɪnəl/ adjective in a lengthwise direction

longitudinal axis /ˈlɒŋɡtˈjuːdʒɪnəl ˈæksɪs/ noun the axis of the aircraft which extends from the nose to the tail. Opposite: axis, roll

long-range /ˈlɒŋ ˈrɛntʒəl/ adjective 1. covering a long distance. 2. long-range radar. 3. long-range weather forecast covering a period more than 5 days ahead

lookout /ˈluːkəʊt/ noun a careful watch. Keep a careful lookout for other aircraft. Opposite: on the lookout for to watch carefully for something

loop /luːp/ noun a flight manoeuvre in which the aircraft rotates, nose up, through 360° while holding its lateral position

loop antenna /ˈluːp ənˈtɛnə/ noun circular-shaped conductive coil which rotates to give a bearing to a ground station

LORAN abbreviation long-range air navigation system

lose /luːz/ verb not to have something any longer. (NOTE: losing – lost) to lose altitude to descend from higher to lower altitude


loudbasekr /ˈlaʊdˌspɪkrə/ noun an electromagnetic device that converts electrical signals into audible noise. Also called speaker

lounge /ˈlaʊndʒ/ noun VIP lounge a special room at an airport for VIPs. Opposite: departure lounge

louvre /ˈluːvə/ noun thin, horizontal openings for air cooling. Cold air can be let into the cabin through adjustable louvres. (NOTE: The US spelling is louver.)

low /ləʊ/ adjective 1. not high, not tall. Opposite: low building, low cloud. Cloud relatively near the surface of the earth. Opposite: low ground. An area of land which is not high, as opposed to mountains. Low, not high, or below normal. An area of low pressure. Opposite: low temperature. A temperature which shows that it is cold. Quiet, not loud. Opposite: low an area of low atmospheric pressure. Opposite: polar low. An area of low atmospheric pressure over polar regions.

lower /ˈlɔʊər/ adjective 1. referring to something that is at a low level or towards the bottom. Opposite: the lower layers of the atmosphere. Opposite: the lower surface of the wing. The underneath surface of the wing. Opposite: referring to something which is below something else of the same sort. Opposite: Air is cooler high up than at lower levels. Opposite: upper. Opposite: to lower the undercarriage move the undercarriage into position ready for landing. Opposite: to lower the flaps. Set the flaps to a down position. Opposite: to reduce in amount or intensity to lower the temperature. Opposite: to lower the pressure. To decrease the pressure.
the volume (of sound) to make something such as a radio quieter or less loud

lower airspace /ˌləʊər ˈɛəspɛrs/ noun the airspace below FL245 (approximately 24,500 ft)

lower atmosphere /ˌləʊər ˈætμəsfər/ noun the layer of the atmosphere in which changes in the weather take place. Also called troposphere

low frequency /ˌləʊ ˈfrɪkwənsi/ low frequency band /ˌləʊ ˈfrɪkwənsi ˌbænd/ noun a radio communications range of frequencies between 30–300 kHz. Abbreviation LF

lubricate /ˈlʌbrɪkət/ verb to oil or to grease moving parts in order to reduce friction. Oil passes through the hollow crankshaft to lubricate the big-end bearings. Turbo chargers are lubricated by the engine oil system.

lubrication /ˈlʌbrɪkəʃən/ noun the act or process of covering moving surfaces with oil or grease in order to reduce friction. Lubrication system the tank, pipes, pumps, filters, etc., which together supply oil to moving parts of the engine

luggage /ˈlʌɡidʒ/ noun baggage, i.e. cases and bags that somebody takes when travelling
Mach /mæk/ noun the ratio of the speed of an object to the speed of sound in the same atmospheric conditions ○ Mach 2 equals twice the speed of sound.

COMMENTS: Named after E. Mach, the Austrian physicist who died in 1916.

Mach number /mæk/ noun a number that expresses the ratio of the speed of an object to the speed of sound

magnesium /mæg'nɪzɪəm/ noun a light, silvery-white metallic element that burns with a brilliant white flame. Symbol Mg (NOTE: The atomic number of magnesium is 12.)

magnesium flare /mæg'nɪzɪəm flɛə/ noun a device for distress signalling at night ○ to send off magnesium flares

magnet /ˈmæɡnɪt/ noun an object that produces a magnetic field, and attracts iron and steel ○ Magnetism in a magnet appears to be concentrated at two points called the poles.

magnetic /ˈmæɡnɪtɪk/ adjective referring to or having the power of a magnet or something with a magnetic field ○ A freely suspended magnet – not influenced by outside forces – will align itself with the Earth’s magnetic lines of force which run from the north magnetic pole to the south magnetic pole.

magnetic bearing /ˈmæɡ.ˌnetɪk ˈbɛərɪŋ/ noun the angle measured in a clockwise direction of a distant point, relative to magnetic north

magnetic declination /ˈmæɡ.ˌnetɪk ˈdɛk.əl.ˈneɪ.ʃən/ noun same as magnetic variation ○ To convert magnetic bearing into true bearing it is necessary to apply magnetic variation at the point at which the bearing was taken.

magnetic field /ˈmæɡ.ˌnetɪk ˈfɪld/ noun area of magnetic influence

magnetic north /ˈmæɡ.ˌnetɪk ˈnɔːθ/ noun the direction of the Earth’s magnetic pole, to which the north-seeking pole of a magnetic needle points if unaffected by nearby influences

magnetic pole /ˈmæɡ.ˌnetɪk ˈpəʊl/ noun one of the two poles which are the centres of the Earth’s magnetic field

magnetic variation /ˈmæɡ.ˌnetɪk ˈvɛr.ə.ti.ʃən/ noun differences in the Earth’s magnetic field in time and place ○ To convert magnetic bearing into true bearing it is necessary to apply magnetic variation at the point at which the bearing was taken. Also called magnetic declination

magnetise /ˈmæɡ.ˌnət.ɪz/, magnetize verb to convert an object or material into a magnet ○ Ferro-magnetic materials are easily magnetised.

magnetism /ˈmæɡ.ˌnətɪz(ə)m/ noun a force exerted by a magnetic field ○ An electric current produces magnetism,
Aero-engines must be maintained regularly to maximise engine life.

**maintenance** /ˈmeɪntənəns/ noun a regular periodic inspection, overhaul, repair and replacement of parts of an aircraft and/or engine. The gas turbine is a very simple engine with few moving parts when compared with a piston engine, giving it a high reliability factor with less maintenance. **maintenance manual** the manufacturer’s instruction book of maintenance procedures.

...poor maintenance training is expensive for the airline who notices the problem in late departures, longer than necessary maintenance periods and worst of all, crashes [Civil Aviation Training].

**maintenance crew** /ˈmeɪntənəns kruːz/ noun ground staff whose responsibility it is to keep the aircraft serviceable. **The maintenance crew worked through the night to complete the work.**

**major** /ˈmeɪdʒər/ adjective important. There are two major cloud groups, stratus and cumulus. Opposite **minor** a major airport a large, important or international airport. **major problem** a serious problem. Opposite **minor**

**majority** /ˈmeɪdʒərɪti/ noun the greater number or larger part—anything more than 50% The majority of passengers prefer to sit in a non-smoking area of the cabin.

**malfunction** /ˈmælfʌŋkʃən/ noun a failure to work or to function correctly. The oil pressure and temperature of the CSDU can be monitored by the pilot and if a malfunction occurs, the pilot can then choose to disconnect the CSDU from the engine. **verb** to function incorrectly or fail to function. Oscillating outputs from the alternators could cause sensitive equipment to malfunction.

**mandatory** /ˈmændərəri/ adjective compulsory, required or ordered by an official organisation or authority. **Fire detection systems in toilets are mandatory.**

**maneuver** /ˈmaʊnəvər/ noun US same as manœuvre
Maneuverability

Maneuvering area

Manifold

Manifold pressure

Manner

Manoeuvrability

Manoeuvre

Manoeuvring area

Manual

Manual control

Manually

Manufacture

Map

Maritime

Margin

Mark

Marked

Manoeuvrability  /məˈnuːvərəlɪ/ noun US same as manoeuvrability

Maneuvering area /məˌnjuːvərɪŋ/ noun US same as maneuvering area

Manifold /ˈmænɪfəuld/ noun a system of pipes for a fluid from single input to multiple output or multiple input to single output ○ inlet and exhaust manifolds of a piston engine

Manifold pressure /ˌmænɪˈfɔːld/ preˈʃə noun absolute pressure in the induction system of a piston engine measured in inches of mercury

Manner /ˈmænər/ noun a way of doing something ○ Wind is said to be veering when it changes direction in a clockwise manner ○ Pre-flight checks should be done in the correct manner.

Manoeuvrability /məˌnjuːvəˈrəlɪ/ noun the ability and speed with which an aircraft can turn away from its previous path ○ Light training aircraft do not have great manoeuvrability but they are stable and therefore easier to fly. (NOTE: The US spelling is manoeuvrability.)

Manoeuvre /məˈnjuːvə/ noun any deliberate or intended departure from the existing flight or ground path (NOTE: It is also written maneuver in US English.) ○ Flight manoeuvre turns, loops, climbs and descents ○ ground manoeuvre taxing and turning onto runways and taxiways, etc.

Manoeuvring area /məˌnjuːvərɪŋ/ noun the part of the aerodrome used for the take-off, landing and taxing of aircraft

Manual /ˈmænjuəl/ adjective referring to the hands, or done or worked by hand ○ The electronic flight instrument system has two self-test facilities – automatic and manual. ■ noun a reference book giving instructions on how to operate equipment, machinery, etc. ○ maintenance manual ○ aircraft operating manual

Manual control /ˈmænjuəl kənˈtrəʊl/ noun hand-flying an aircraft equipped with an autopilot or automatic flight control system

Manually /ˈmænjuəlɪ/ adverb by hand ○ The system is switched on manually.

Manufacture /ˌmænjuəˈfæktʃər/ verb to make a product for sale using industrial machines ○ The centrifugal compressor is usually more robust than the axial flow type and also easier to develop and manufacture.

Map /mæp/ noun a representation of the Earth's surface on a flat surface such as a sheet of paper ○ a map of Africa ■ verb to make measurements and calculations of part of the Earth's surface in order to produce a map

MAP abbreviation missed approach point

Margin /ˈmɑːdʒɪn/ noun 1. a blank space bordering the written or printed area on a page ○ Write notes in the margin of the book. 2. an amount allowed in addition to what is needed ○ safety margin ○ In some configurations, it is possible for the buffet speed to be less than the required 7% margin ahead of the stall.

Maritime /ˈmærɪtɪm/ adjective referring to the sea ○ maritime wind a wind blowing from the sea ○ The Rocky Mountains of North America act as a barrier to the cool maritime winds from the Pacific Ocean.

Mark /mɑːk/ noun 1. a visible trace on a surface, e.g. a dot or a line ○ There are marks on tyres and wheel rims which are aligned and indicate the extent of tyre creep. 2. the number of points or a percentage given for academic work ■ verb 1. to make a visible line, dot, etc., on a surface ○ Mark the departure point on the chart. 2. to show or indicate ○ The weather front marks the boundary between the two air masses. 3. to correct or check academic work done by a student ○ The instructor marked the exam papers.

Marked /mɑːkt/ adjective very noticeable, clear and definite ○ a marked increase a noticeable, therefore possibly large, increase ○ a marked change in the weather a significant change in the weather
marker /ˈmæskə/ noun 1. something which acts as an indicator of something such as distance or position 2. a radio beacon that is part of the ILS

COMMENT: The outer marker (OM) is indicated on the instrument panel, by a blue light. The middle marker (MM) is indicated by an amber light and the inner marker (IM) by a white light.

marker dye /ˈmæskə dɑːt/ noun a brightly coloured substance used by people adrift at sea to draw the attention of flight crews to their position

marshaling /ˈmɑrʃəlɪŋ/ noun 1. a large body of air in regions of low pressure and of warm air rising over a cold air mass

mastery /ˈmæstərɪ/ noun 1. a vertical pole for a flag or antenna ○ Ice accretes on the leading edge of the detector mast. 2. a tube projecting from the underside of the aircraft from which liquid can drain well away from the airframe

master /ˈmɑstər/ adjective main or principal ○ master cylinder a hydraulic cylinder from which pressure is transmitted to smaller slave cylinders ○ verb to overcome the difficulty of something. ○ It takes practice to master crosswind landings in light aircraft.

master key /ˈmɑstər kɪə/ noun a key which can open a number of doors, etc.

master switch /ˈmɑstər swɪtʃ/ noun the most important of a number of switches operating a system

match /ˈmætʃ/ verb 1. to go well together ○ The most important factor when matching a propeller to an engine is tip velocity. 2. to be equal to ○ The polarisation of the antenna must match that of the transmitter.

material /ˈmeɪtəriəl/ noun a substance out of which something can be made ○ Wood, fabric and paper are all free-burning materials.

MATCH abbreviation military air traffic operations

matrix /ˈmeɪtrɪks/ noun a grid-like arrangement of circuit elements ○ Oil coolers consist of a matrix, divided into sections by baffle plates.

matter /ˈmeɪtər/ noun 1. a physical substance ○ Mass is a basic property of matter. ○ foreign matter something unwanted which is found in a substance or a device (such as sand or water in fuel) ○ Turbine blades can be damaged by foreign matter such as stones entering through the engine intake on take-off. ○ solid matter solid substances 2. a subject for discussion, concern or
action o Safety is a matter of great importance. 3. trouble or difficulty o what’s the matter? what’s the problem? o it doesn’t matter it isn’t important, so don’t worry

MATZ abbreviation military aerodrome traffic zone

maximum /ˈmæksɪməm/ adjective greatest possible o The maximum daily temperature is 35°C. o The maximum speed of the aircraft is 200 kt. ■ noun the greatest possible quantity, amount, etc. o There is a net gain of heat by the Earth until terrestrial radiation balances solar radiation when the daily temperature is at its maximum.

maximum total weight authorised /ˈmæksɪməm ˈtɔːt(ə)rɪzd/ noun the maximum authorised weight of aircraft fuel, payload, etc., given in the Certificate of Airworthiness. Abbreviation MTWA

mb abbreviation millibar

MDA /mɛdɪə/ abbreviation minimum descent altitude

mean /ˈmiːn/ adjective referring to something average, midway between two extremes o mean daily temperature average daily temperature o mean wind the average speed of a wind ■ noun something having a medium or average position, midway between two extremes o arithmetic mean the average value of a set of numbers ■ verb 1. to signify or to have something as an explanation o Airspeed means the speed of the aircraft in relation to the air around it. 2. to intend to do something o I meant to telephone the reservations desk this morning but I forgot. 3. to result in o Installing a new computer network means a lot of problems for everybody. (note: meaning – meant)

mean effective pressure /ˈmiːn ˈɛfɪk(ə)rəl/ noun the average pressure exerted on the piston during the power stroke. Abbreviation MEP

means /ˈmiːnz/ noun a way of doing something which brings a result o A clear window fitted in the reservoir provides a means of checking hydraulic fluid level during servicing. (note: Means has no plural form.) o by means of by using o Fuel is transferred from the tanks to the carburettor by means of pipes. o there are various means for navigation there are various different methods used for the purposes of navigation

mean sea level /ˈmiːn ˈsiː ˈlev(ə)/ noun the average level of the sea taking tidal variations into account. o Below FL50 cloud heights are referred to a datum of mean sea level. Abbreviation MSL

mean sun /ˈmiːn ˈsʌn/ noun the position of an imaginary sun in a solar day of exactly 24 hours, behind the real sun in February and in advance of the real sun in November. o Local mean time (LMT) is the time according to the mean sun.

mean time between failures /ˈmiːn tɜːm ˈbɛt ˈfeɪljuəz/ noun full form of MTBF

mean time to repair /ˈmiːn ˈtɜːm ˈtɪpər/ noun full form of MTTR

measure /ˈmeʒər/ noun 1. an indication or way of assessing o The way he dealt with the in-flight emergency is a measure of his skill as a pilot. 2. a reference for discovering the dimensions or amount of something o The litre is a measure of capacity. 3. a device used for measuring o a 1-metre measure a ruler that is 1 metre long. 4. an action taken to get a result o Stricter safety measures were introduced. 5. an amount of something o To be a good pilot, you need a measure of self-confidence. ■ verb 1. to find the dimensions or amount of something o to measure a distance o to measure an angle o to measure the speed of an aircraft o Wind directions are measured from magnetic north. 2. to be of a particular size, length, quantity, etc. o How much does the pipe measure?

measurement /ˈmeʒəment/ noun 1. an act of measuring o Measurement of relative humidity is done using an instrument called a hygrometer. 2. the result of measuring o The measurements of the room are: height = 4 metres, length = 10 metres, width = 4 metres.
mechanical /ˈmiːkənɪk(ə)/ adjective referring to machines. Activation may be electrical or mechanical.

mechanical advantage /ˈmiːkənɪkl ədˈvɑntɪdʒ/ noun the ratio of the output force produced by a machine to the input force.

mechanical engineering /ˈmiːkənɪkl ɪnˈdʒɪniəriŋ/ noun the study of design, construction, and use of machinery or mechanical structures. She gained a degree in mechanical engineering from university.

mechanical linkage /ˈmiːkənɪkl ˈlɪŋkwɪdʒ/ noun a system of rods, cables and levers in a light aircraft, which connect the control column in the cockpit to the control surfaces on the wings, tailplane and fin.

mechanics /ˈmiːkənɪks/ noun 1. the study of the action of forces on matter or material systems. 2. the way something works. The mechanics of the foil wind provide a good illustration of the adiabatic process.

mechanism /ˈmekənɪzəm/ noun 1. the arrangement of connected parts in a machine or system of the landing gear mechanism. 2. the nose wheel steering mechanism. 3. a physical process. The mechanism by which thunderstorms develop.

MEDA abbreviation military emergency division aerodrome.

medical certificate /ˈmedɪk(ə)l ˈsərˌɪfɪkat/ noun a document which confirms that the named person has been medically examined and declared to be in good physical condition.

medical emergency noun a situation when somebody is unwell and quickly needs medical care.

medium /ˈmiːdɪəm/ adjective referring to something that has a position or represents a condition midway between extremes. High, medium and low frequencies.

medium frequency /ˌmiːdɪəm ˈfriːkwənsi/ noun radio frequency range between 300 kHz and 3000 kHz – often referred to as medium wave (MW). Abbreviation MF.

megahertz /ˌmeɡəˈhɛrtz/ noun a measure of frequency equal to one million cycles per second. Abbreviation MHz.

melt /melt/ verb to become liquid by heating. Ice melts at temperatures above freezing.

member /ˈmembər/ noun 1. a large, important structural unit. The skin is bonded to the internal members. A beam is a member which is designed to withstand loading applied at an angle to it, often perpendicular. 2. a person who joins a club or organisation. He is a member of the gliding club. 3. a person in a team or crew. Most large passenger aircraft are now operated by two crew members.

memorise /ˈmɛməraɪz/, memorize verb to fix in the memory, to learn by heart. It is helpful if a student pilot can memorise certain items, such as downwind checks, early in his training.

memory /ˈmɛməri/ noun 1. the mental ability of remembering and recalling past events or information. He has a good memory. He remembers things easily. 2. part of a computer which is used for the fast recall of information. The computer cannot run many programs at the same time because it doesn’t have enough memory.

mental /ˈment(ə)l/ adjective referring to the mind or brain. Anoxia severely limits physical and mental performance.

mental calculation a calcula-
mention /ˈmenʃ/ verb to refer to something briefly or as mentioned in chapter 4 or as I mentioned yesterday. No one mentioned the incident.

MEP abbreviation mean effective pressure

Mercator’s projection /məˈkɛtrə ˈprəˌdʒəkʃən/ noun a map projection of the Earth onto a cylinder so that all the parallels of latitude are the same length as the equator. Since meridians on this projection are represented by parallel straight lines, it is impossible to represent the poles on Mercator’s projection.

COMMENT: Named after the Latinised name of G. Kremer, the Flemish-born geographer who died in 1594.

mercury /ˈməkjəri/ noun a silver-coloured metallic element, liquid at room temperature, used in thermometers. Manifold pressure gauges are calibrated in inches of mercury.

mercury barometer /ˌməkjəriˈbærəmətər/ noun type of barometer where the atmospheric pressure is balanced against a column of mercury. The principle of a mercury barometer has not changed since 1643 when Torricelli demonstrated that the atmosphere can support a column of liquid.

meridian /ˈməridiən/ noun an imaginary great circle on the Earth’s surface passing through the north and south geographic poles

mesh /mɛʃ/ noun a net-like structure. A chart of part of the Earth’s surface with information about weather conditions is given in metres up to, and thereafter in kilometres.

meteorological /ˌmiːtəˈrɒlədʒɪkəl/ adjective referring to meteorology. Meteorological forecast a prediction of the weather to come. Meteorological visibility the greatest horizontal distance at which objects can be seen and recognised by an observer on the ground with normal eyesight and under conditions of normal daylight illumination. Meteorological visibility is given in metres up to 5,000 metres, and thereafter in kilometres.

METAR /ˈmɪtər/ abbreviation aviation routine weather report

meteorological conditions /ˌmiːtəˈrɒlədʒɪkəl ˈkændənsz/ plural noun a description of the weather in a given area

meteorologist /ˌmiːtəˈrɒlədʒɪst/ noun a person who studies, reports and forecasts the weather. The analysis of the surface chart is the procedure in which the meteorologist completes the chart by inserting the fronts and isobars in their correct positions.

meteorology /ˌmiːtəˈrɒlədʒi/ noun a science which studies weather and weather conditions. Terrestrial radiation plays an important part in meteorology.

meter /ˈmiːtər/ noun 1. US same as metre. 2. a device to measure current, rate of flow, vertical distance, speed, etc. The crew can use the public address system to broadcast messages to the passengers. There’s a message from Mr. Jones on your desk.

met /met/ abbreviation meteorology

metal /ˈmet(ə)l/ noun one of the metallic elements e.g. iron, gold, mercury, copper, aluminium. Non-metallic materials wood, plastics, fabrics, etc., which are not made of metal.

methanol /ˈmɛθənəl/ noun a colourless, toxic, flammable liquid, CH₃OH, used as an antifreeze, a general solvent, and a fuel, also called methyl alcohol or wood alcohol. Power output can be restored, or can be boosted to a value over 100% maximum power, by the injection of a water/methanol mixture
at the compressor inlet or at the combustion chamber inlet.

method /ˈmɛθəd/ noun a particular way of doing something, especially if it is well thought out and systematic. The most common method of displaying radar information is on a cathode ray tube.

metre /ˈmɛtər/ noun an international standard unit of length, approximately equivalent to 39.37 inches. Abbreviation m (NOTE: It is also written meter in US English.)

MF abbreviation medium frequency

MFD abbreviation multi-function display

MHz symbol megahertz

micro- /ˈmaɪkroʊ/ prefix small. Opposite mega- (NOTE: The prefix micro- is used in front of SI units to indicate a one millionth part: microsecond = one millionth of a second.)

microburst /ˈmaɪkroʊbɜːrst/ noun a particularly strong wind-shear especially associated with thunderstorms. The investigation revealed that the crew lost control of the aircraft as it flew through the microburst.

microlight /ˈmaɪkroʊlaɪt/ noun a small light aircraft, often with an open fuselage, that can carry one or two people at low speeds and is used for flying for pleasure or reconnaissance

micro-switch /ˈmaɪkroʊswɪtʃ/ noun a miniature switch used to govern systems automatically. Operation of an aircraft may also be seriously affected by the freezing of moisture in controls, hinges and micro-switches. (NOTE: The plural form is micro-switches.)

microwave landing system /ˌmaɪkwəriv ˈlændɪŋ ˌsɪstəm/ noun an extremely accurate guidance system for landing aircraft that uses microwaves. Abbreviation MLS

mid- /maɪd/ prefix middle. The middle of the summer

mid-air /ˌmaɪd ˈeər/ adjective: mid-air collision collision between aircraft in the air rather than on the ground

middle /ˈmɪdl/ adjective in the centre. Middle marker • noun the centre of the seat in the middle of the row.

middle airspace service • mid-air service • noun a radar service provided by an air traffic control area radar unit in the airspace between FL100 and FL245. Abbreviation MAS

middle marker • mid-air • marker • noun an ILS marker beacon on extended runway centre line, usually 3500 feet from the runway threshold.

MIL abbreviation military

mile /maɪl/ noun • statute mile

military /ˈmɪlɪtəri/ adjective relating to war or to the armed services.

milk run /ˈmɪlk rʌn/ noun a routine trip, especially an airline’s regular flight.

millibar /ˈmɪlɪbɑːr/ noun a unit of atmospheric pressure equal to 1 thousandth of a bar. Symbol mb

milligramme /ˈmɪlɪɡrəʊm/ noun one thousandth of a gramme.

millilitre /ˈmɪlɪlɪtər/ noun one thousandth of a litre.

millimetre /ˈmɪlɪmɪtər/ noun one thousandth of a metre. (NOTE: It is usually written mm after figures: 35mm. Also written millimeter in US English.)

min abbreviation minimum

minimum /ˈmɪnɪməm, ˈmɪnɪməm/ noun smallest possible. The minimum amount required.

minimal /ˈmɪnɪməl/ adjective very small in amount, importance or degree.

minimum weather • minimum • definition a routine trip, especially an airline’s regular flight.

minimum weather • minimum • definition smallest possible. The minimum amount required. Minimum weather requirements for a particular operation such as runway visual range (RVR).

minimum • minimum • definition minimum • definition smallest possible. The minimum amount required. Minimum weather requirements for a particular operation such as runway visual range (RVR).

minimum • minimum • definition minimum • definition smallest possible. The minimum amount required. Minimum weather requirements for a particular operation such as runway visual range (RVR).

minimum • minimum • definition minimum • definition smallest possible. The minimum amount required. Minimum weather requirements for a particular operation such as runway visual range (RVR).
minimum flying speed  150

to a minimum, the difference between cabin pressures and the external atmospheric pressures should be kept to a minimum. (NOTE: The plural form is minima or minimums.)

minimum flying speed
/ˌmɪnɪm ˈflæŋ ˈspiːd/ noun the lowest true air speed at which an aircraft can maintain height

minimum fuel
/ˌmɪnɪm ˈfjuːəl/ noun the amount of fuel required to reach destination and land without delay

minimum sector altitude
/ˌmɪnɪm ˈsɛktər ˈæltɪtjuːd/ noun the lowest altitude at which an aircraft may fly under emergency conditions and which will provide a minimum clearance of 1000 ft above all obstacles located within a particular sector

minimum separation
/ˌmɪnɪm ˌsepəˈreɪʃən/ noun the minimum vertical or horizontal distance allowed between two aircraft

minor
/ˈmɪnər/ noun a person under the age of legal adulthood. adjective small in size or amount and therefore relatively unimportant. Opposite major

minor repairs
reparations which can be made quickly and with the minimum amount of equipment

minus
/ˈmɪnəs/ preposition reduced by ○ 6 minus 2 equals 4 (6 – 2 = 4). noun a minus sign (-) ○ minus forty degrees Celsius (-40 °Celsius)

minute
noun /ˈmɪntɪ/ 1. a time period of 60 seconds ○ There are 60 minutes in one hour. ○ wait a minute wait a while or a short period of time 2. a unit of angular measurement equal to one sixtieth of a degree ○ 20 degrees and 20 minutes east (20° E). adjective minute very small indeed ○ Metal fatigue begins as minute cracks, too small to be seen, at the point of maximum stress.

miscellaneous
/ˌmɪsəˈleməs/ adjective various, mixed, not all the same ○ The first aid box contains miscellaneous items for use in a medical emergency.

miss
/mɪs/ verb not to get or catch ○ Two passengers arrived so late that they missed the flight.

missed approach
/ˌmɪst əˈprəʊtʃ/ noun an approach that does not result in a landing and is followed by a go-around

missed approach point
/ˌmɪst əˈprəʊtʃ ˈpɔɪnt/ noun the point at which a pilot must carry out a missed approach procedure if a particular visual reference has not been made

missed approach procedure
/ˌmɪst əˈprəʊtʃ ˈprəʊtʃ prəˌðiːdʒ/ noun the action and flight path to be followed after a missed approach at a particular aerodrome

mist
/mɪst/ noun 1. visible water vapour, in the form of very fine droplets, in the atmosphere ○ Mist is thinner than fog. 2. liquid in spray form ○ an air/oil mist ○ verb ○ to mist up to become covered in tiny water droplets and therefore prevent clear vision through a surface ○ The windscreen misted up.

mix
/mɪks/ verb to put together in order to form one mass ○ It is a fact of nature that different air masses do not mix together

mixture
/mɪkstʃər/ noun something which is the result of a number of things mixed together

mixture control
/ˈmɪkstʃər kənˌtraʊəl/ noun a device for controlling the ratio of fuel to air entering an engine's carburettor or fuel injection system. The mixture control is a knob or lever marked in red usually to the right of the throttle lever. ○ In order to stop the engine, the mixture control should be moved fully aft.

MLS
abbreviation microwave landing system

mm
abbreviation millimetre

MM
abbreviation middle marker

MMDR
abbreviation multi-mode receiver

mnemonic
/ˈmɪnəmɪk/ noun something such as a word, sentence or little poem which helps the memory

Miscellaneous items for use in a medical emergency.
COMMENT: Some of the well known mnemonics are: ARROW – Airworthiness Certificate, Registration Document, Radio Station Licence, Operating Handbook, Weight and Balance document – documents to be carried in (light) aircraft (US); BUMF checks – Brakes, Undercarriage, Mixture, Fuel – downwind checks in a light, single engine aircraft with a fixed-pitch propeller; FREDA – Fuel, Radio, Engine, Direction indicator, Altimeter – field, approach and environmental checks; HASSELL – Height, Airframe, Security, Engine, Location, Lookout – pre-stall checks; variation east, magnetic least. A mnemonic to help remember whether to add or subtract variation.

MOA abbreviation military operations area

mode /mɔd/ noun 1. a particular selected setting for the operation or functioning of equipment o automatic mode o manual mode 2. a letter or number given to the various pulse spacings of airborne transponders and ground interrogators o Mode A and mode C for altitude reporting, are used in air traffic control.

model /ˈmɒdəl/ noun a simplified description of a system, often in mathematical form, designed to make calculation simpler o The description of the weather patterns is a model only which, in reality, is modified greatly by a number of factors.

moderate adjective /ˈmɑrədət/ 1. referring to something well within limits, not extreme o a moderate climate a climate which is not too hot, not too cold 2. the middle of three descriptions of intensity or amount, i.e. light, moderate, severe o moderate humidity humidity which is not light or severe o light to moderate varying between light and moderate o light to moderate icing o moderate to severe varying between moderate and severe o moderate to severe turbulence o verb /ˈmɑrədet/ to become or cause to become less extreme o The south west wind moderates the climate of the UK o As the wind moderated, the aircraft was allowed to take off.

modern /ˈmɔdədn/ adjective up to date, referring to the present day o Modern engines are far more powerful than engines used in the past.

modification /ˌmɒdfɪˈkeɪʃən/ noun an alteration or change in character or form which is normally an improvement o There have been many modifications to the simple carburettor over the years. o As a result of the crash, modifications were made to the rudder linkage.

modify /ˈmɒdfɪˈeɪ/ verb to change or alter in order to improve o The landing gear was modified to provide greater strength. (NOTE: modifying – modified)

modulate /ˈmɑdʒuˌleɪt/ verb to change the frequency, amplitude, phase, or other characteristic of an electromagnetic wave o The ground station transmits a code in two short bursts, each of which is modulated with two tones.

modulation /ˌmɒdʒuˈleɪʃən/ noun a change in a property of an electromagnetic wave or signal, such as its amplitude, frequency, or phase. o Pulse modulation is a series of quick, short bursts of energy which are radiated from an antenna which serves both the transmitter and the receiver.

module /ˈmɒdʒjuːl/ noun a replaceable detachable unit

moist /mɔɪst/ adjective a little wet, damp or humid o Warm moist air from the Gulf of Mexico can extend into Canada.

moisture /ˈmɑɪstʃər/ noun water or other liquid o When the air passing through the carburettor is reduced below 0°C (Celsius), any moisture in the air changes into ice.

moisture content /ˈmɔɪstʃər ˈkɒntent/ noun the amount of water in the atmosphere or as seen when it condenses onto cold surfaces

mold /mɔld/ noun, verb US same as mould

molecule /ˈmɒlɪkjuːl/ noun the smallest particle into which an element or a compound can be divided without changing its chemical and physical properties o The molecules of a gas...
moment

move more quickly than the molecules of a liquid.

moment /ˈməʊmənt/ noun 1. a short period of time ○ It only takes a moment to fill in the log book. 2. a point in time ○ at the moment at this particular time ○ He’s not in the office at the moment. 3. the product of a quantity and its perpendicular distance from a reference point ○ A load on the end of a beam creates a bending moment. 4. the tendency to cause rotation about a point or an axis ○ The tailplane provides a pitching moment to keep the aircraft level.

momentum /ˈməʊməntəm/ noun a measure of the motion of a body equal to the product of its mass and velocity ○ In rain, the faster an aircraft travels the more water it meets and the greater the relative momentum of the water droplets.

monitor /ˈmɒnɪtər/ noun a visual display unit for a computer ○ verb to check, on a continuing basis ○ Flowmeters are fitted which allow crew to monitor the flow of fuel to each engine.

monitor system /ˈmɒnɪtər ˈsɪstəm/ noun system for checking and warning

monocoque /ˈmɒnəkək/ noun a three-dimensional body with all the strength in the skin and immediately underlying framework ○ In monocoque construction there is no internal stiffening, as the thickness of the skin gives the strength and stability.

monoplane /ˈmɒnəplən/ noun an aircraft that has only one pair of wings

monsoon /ˈmɒnˌsuːn/ noun a wind from the south-west or south that brings heavy rainfall to southern Asia in the summer ○ Although the monsoon winds are thought of as being Asiatic phenomena, they do occur over Africa and parts of North America, especially the Gulf of Mexico. ○ monsoon season a season of wind and heavy rainfall in tropical countries

morning mist /ˈmɔrɪŋ ˈmɪst/ noun a mist which usually disappears before midday, as the result of warming from the sun

Morse /ˈmɔrs/ noun a code used for transmitting messages in which letters of the alphabet and numbers are represented by dots and dashes or short and long signals ○ VOR (very high frequency omni-directional radio range) stations transmit a 2 or 3-letter aural Morse callsign on the reference signal at least every 30 seconds. (NOTE: Morse is still used for identifying some radio beacons.)

COMMENT: Named after S. F. B. Morse, the American electrician who died in 1872.

motion /ˈməʊʃ(ə)n/ noun movement, the act of changing position or place ○ horizontal motion movement from side to side ○ rotary motion circular movement ○ vertical motion up and down movement

MOTNE noun a network for the exchange of meteorological information needed by meteorological offices, VOLMET broadcasting stations, air traffic service units, operators and other aeronautical users. Full form Meteorological Operational Telecommunications Network Europe

motor /ˈməʊtər/ noun a machine which provides power for moving a vehicle or device with moving parts ○ an electric motor ○ a hydraulic motor (NOTE: Piston or jet power plants for aircraft are referred to as engines not motors.)

mould /ˈmɔuld/ noun a hollow shape for forming plastics, etc. ○ Moulds are used in the manufacture of plastic components. ○ verb to shape, often using a mould ○ Thermo-plastic material becomes soft when heated and can be moulded again and again. (NOTE: It is also written mold in US English.)

mount /ˈmaʊnt/ verb to fix to a support ○ A propeller consists of a number of separate blades mounted in a hub.

mountain /ˈmaʊntən/ noun a mass of rock rising above ground level, higher than a hill ○ They flew over mountains in the south of the country.

Mountain Standard Time /ˈmaʊntən ˈstændərd ˈteɪm/ noun a time zone of the west-central part of the USA and Canada, 7 hours behind GMT
mounted /'maʊntɪd/ adjective fixed to a support ○ rear-mounted mounted at the rear of the aircraft ○ Some aircraft such as the Boeing 727 have rear-mounted engines.

mounting /'maʊntɪŋ/ noun a supporting component or attachment point ○ Airbus aircraft have engine mountings under the wings.

movement /'muvəmənt/ noun a change in place or position ○ The upward movement of the piston compresses the fuel/air mixture. ○ movement of the crankshaft the rotation of the crankshaft ○ the downward movement of cool air the downward flow of cool air

mph abbreviation miles per hour

MSL abbreviation mean sea level

MTA /,em tiː 'ɛt/ abbreviation military training area

MTBF /,em tiː bitː 'ɛt/ noun the average period of time that a piece of equipment will operate between problems. Full form mean time between failures

MTTR /,em tiː tiː 'ɛt/ noun the average period of time required to repair a faulty piece of equipment. Full form mean time to repair

MTWA abbreviation maximum total weight authorised

muff /maʊf/ noun an acoustic ear muffs

multi-/maʊlti/ prefix multiple or many

multi-engine /ˌmaʊltiˈendʒɪn/, multi-engined /ˌmaʊltiˈendʒɪnd/ adjective ○ multi-engine(d) aircraft aircraft with more than two engines

multi-function display /ˌmaʊltiˌfʌŋkʃən dɪˈspɛl/ noun an electronic cockpit instrument which displays information such as weather radar or navigation data. Abbreviation MFD

multi-mode receiver /ˌmaʊltiˈrɪqvəˈstɜːvə/ noun a type of radio receiver used in navigation and landing that can receive signals from a variety of different transmission systems

multiplane /ˌmaʊltiˈpleɪn/ noun an aircraft with more than one pair of wings

multiple /ˌmaʊltɪpl/ adjective many ○ Autoland system redundancy employs multiple systems operating in such a manner that a single failure within a system will have little effect on the aircraft’s performance during the approach and landing operation.

multiplication /ˌmaʊltiˈplɪʃən/ noun a mathematical operation to work out a specified number of times the value of a number (NOTE: The multiplication sign is ×.)

multiply /ˌmaʊltiˈplai/ verb to work out a specified number of times the value of a number ○ To multiply 20 by 6 is to calculate what is 6 times 20 (6 x 20). ○ 4 multiplied by 2 is 8 (4 x 2 = 8). ○ To calculate fuel required, multiply the duration of the flight by the consumption of the engine at the required power.

multi-purpose /ˌmaʊltiˈpɜːpəs/ adjective suitable for many different uses ○ multi-purpose tool a tool which can be used in many different ways

multi-wheel combinations /ˌmaʊltiˌwiːlˌkembriˈneɪʃənz/ plural noun undercarriages consisting of a number of wheels on each unit

mutual /ˈmjuːʃəl/ adjective directed and received in equal amount

mutual inductance /ˈmjuːʃəl ɪnˈdʌktəns/ noun electro-magnetic field in one circuit caused by a quickly changing magnetic field in another circuit
**N** abbreviation north

**nacelle** /ˈnasəl/ noun a streamlined housing for an engine ○ The ram air intake is located in a wing leading edge or an engine nacelle fairing.

**narrow** /ˈnærəʊ/ adjective not wide ○ a narrow band of cloud ○ a narrow beam of electrons ○ The narrow aisles of passenger aircraft make it difficult to evacuate an aircraft quickly. Opposite wide, broad

**NAS** abbreviation national airspace system

**National Air Traffic Services** /ˈnɛʃ(ə)nəl æəˈtræfɪk ˈsɛrvɪsɪz/ plural noun the organisation that is responsible for air traffic control at most UK airports. Abbreviation NATS

**NATS** abbreviation National Air Traffic Services

**nature** /ˈnætʃər/ noun 1. the world, especially plants, animals and their environment in general ○ Electricity is one of the fundamental forces of nature. 2. sort or type ○ Action taken by the crew will depend on the nature of the emergency. 3. the essential qualities of something ○ the convective nature of thunderstorms ○ Magnesium is a fire hazard of unpredictable nature.

**nautical** /ˈnɔːtɪk(ə)l/ adjective referring to the sea ○ The terms pitch, roll and yaw are nautical in origin.

**nautical mile** /ˈnɔːtɪk(ə)l mɛl/ noun 1.852 kilometres ○ One knot is equal to one nautical mile per hour. Abbreviation nm. Compare **statute mile** (NOTE: A nautical mile is precisely defined as the length of an arc on the Earth's surface subtended by an angle of one minute at the centre of the Earth.)

**NAVAID** /ˈnævəɪd/ abbreviation navigational aid

**navigation** /ˈnævəˈgeɪʃ(ə)n/ noun the theory and practice of planning, controlling and recording the direction of an aircraft ○ The basis of air navigation is the triangle of velocities.

**navigational** /ˌnævəˈgeɪʃ(ə)nəl/ adjective referring to navigation ○ The accuracy of modern navigational equipment is much greater than older systems.

**navigational aid** /ˌnævəˈgeɪʃ(ə)nəl ɪd/ noun a mechanical or electronic device designed to help a pilot navigate ○ Any type of navigational aid but particularly electronic aids, for example ADF (automatic direction finding) and
NDBs (non-directional beacons). Abbreviation NAVAID
 navigational line /ˈnævəɡəʃənl lín/ noun same as position line
 navigation lights /ˈnævəɡəʃənl laɪts/ plural noun lights on an aircraft consisting of a red light on the left wing tip, a green light on the right wing tip and a white light on the tail

COMMENT: Navigation lights must be used between sunset and sunrise.

navigation log /ˈnævəɡəʃənl ˈɡɒɡən/ noun written details of headings and times for a flight. The flight crew route flight plan is a composite document which also serves as a navigation log.

NDB abbreviation non-directional beacon

necessary /ˈnɛs(ə)si/ adjective needed or essential. A rich mixture is necessary at slow running. as necessary when needed. Warnings, cautions and advisory messages are displayed only when necessary.

necessity /ˈnɛsəsəti/ noun something that is necessary or very important.

needle /ˈnɪdl/ noun a thin metal pointer in an instrument. The needle indicated to zero.

needle valve /ˈnɪdl ˈvælv/ noun a valve formed of a tapered needle projecting into a small opening in a tube, etc., usually connected to a float, which provides fine adjustment of fluid flow.

Atmospheric pressure will allow the capsule to expand, causing the needle valve to move into the opening thus reducing the flow of fuel.

negative /ˈnɛɡətɪv/ adjective 1. a value of less than 0. In a reversing propeller, the propeller mechanism includes a removable ground fine pitch stop which enables the propeller to be set to a negative pitch. 2. referring to an electric charge of the same sign as that of an electron.

the negative terminal of a battery marked with the symbol – and normally coloured black rather than red.

never-exceed speed /ˈnɪvər ɪks/ noun a speed which must not be exceeded. Also called Vne (Velocity Never Exceeded)
### night rating

<table>
<thead>
<tr>
<th>night rating</th>
<th>156</th>
</tr>
</thead>
<tbody>
<tr>
<td>night rating</td>
<td>/ˈnɑːtˌrɪtɪŋ/ noun an additional qualification gained from a course of training for night flying</td>
</tr>
<tr>
<td>nil</td>
<td>/nɪl/ noun nothing, zero ○ nil drizzle no drizzle</td>
</tr>
<tr>
<td>nimbostratus</td>
<td>/ˈnɪmbəʊstrətəs/ noun a cloud forming a low dense grey layer from which rain or drizzle often falls</td>
</tr>
<tr>
<td>nitrogen</td>
<td>/ˈnɑːtrədʒən/ noun a colourless, odourless gas which makes up four-fifths of the Earth’s atmosphere ○ Some aircraft have high pressure air or nitrogen bottles provided in the undercarriage and flap circuits for emergency lowering. (Note: The atomic number of nitrogen is 7.)</td>
</tr>
<tr>
<td>nm</td>
<td>abbreviation nautical mile</td>
</tr>
<tr>
<td>nocturnal</td>
<td>/ˈnɒktrəl/ adjective happening or appearing during the night ○ Because there is a requirement for a cold ground, a katabatic wind tends to be nocturnal, but if the slope is snow-covered, it can also occur during the day.</td>
</tr>
<tr>
<td>no-fly zone</td>
<td>/ˈnəʊflai/ noun an area over which aircraft, especially those of another country, are forbidden to fly</td>
</tr>
<tr>
<td>nominal</td>
<td>/ˈnəʊmən(əl)/ adjective 1. not significant or not important ○ a nominal increase a very small increase 2. named, specific ○ An installed battery becomes fully charged by the aircraft generator; the battery voltage bears its nominal level and the charging current decreases.</td>
</tr>
<tr>
<td>non-</td>
<td>/ˈnɒn/ prefix not or no</td>
</tr>
<tr>
<td>non-directional beacon</td>
<td>/ˈnɒn dɪˈrekʃənal/ˈbɪkən/ noun a radio beacon transmitting a signal by which the pilot can determine his or her bearing. Abbreviation NDB</td>
</tr>
<tr>
<td>non-essential</td>
<td>/ˈnɒn ɪˈsesn(əl)/ adjective not necessary ○ In order to ensure the shortest possible take-off run, all non-essential equipment was removed.</td>
</tr>
<tr>
<td>non-return valve</td>
<td>/ˈnɒn ˈrɪtərn ˈvælv/ noun a valve which allows a fluid to pass in one direction only ○ As the piston moves upwards in the cylinder, fluid is drawn in through a non-return valve.</td>
</tr>
<tr>
<td>non-smoking area</td>
<td>/ˈnɒnməʊkɪŋ eərə/ noun an area where smoking is not allowed</td>
</tr>
<tr>
<td>normal</td>
<td>/ˈnɔːməl/ adjective referring to something which is usual and is to be expected ○ <strong>under normal conditions</strong> when everything is as it usually is</td>
</tr>
<tr>
<td>normal room temperature</td>
<td>/ˈnɔːməl ˈtɛmprətʃə/ noun the temperature regarded as comfortable for usual daily activity</td>
</tr>
<tr>
<td>north</td>
<td>/nɔːθ/ noun compass point 360°, the direction towards which the magnetic needle points on a compass ○ Fly towards the north. ○ The wind is blowing from the north. ○ <strong>north facing mountain side</strong> the face of the mountain which looks towards the north</td>
</tr>
<tr>
<td>northbound</td>
<td>/ˈnɔːθbaʊnd/ adjective travelling towards the north ○ a northbound flight</td>
</tr>
<tr>
<td>north-east</td>
<td>/ˈnɔːθ ˈeɪst/ˈlɪst/ noun the direction between north and east ○ After take-off, the aircraft turned to the north-east. ○ <strong>north-eastern</strong> 1. situated in the north-east ○ the north-east coast of England 2. blowing from or coming from the north-east ○ a north-east wind ○ <strong>north-easterly</strong> 1. blowing from or coming from the north-east ○ A north-easterly wind was blowing. 2. moving towards the north-east ○ <strong>north-eastern</strong> 1. referring to or situated in the north-east ○ the north-eastern part of the United States ○ <strong>northerly</strong> 1. situated towards the north ○ the most northerly point of a country 2. blowing from or coming from the north ○ <strong>northerly airflow</strong> airflow coming from the north</td>
</tr>
</tbody>
</table>
North Pole /nɔːθ pəʊl/ noun the point which is furthest north on the earth. From the UK the aircraft flew over the North Pole to Vancouver.

northward /ˈnɔːθwərd/ adjective going towards the north. 

northwards /ˈnɔːθwərdz/ adverb towards the north. One of the aircraft was flying northwards.

north-west /nɔːθwɛst/ west noun the direction between north and west. The aircraft turned towards the north-west.

north-westerly /ˈnɔːθwɛstərli/ adjective. blowing from or coming from the north-west.

north-western /ˈnɔːθwɛstərn/ adjective referring to or situated in the north-west part of the United States.

north wind /nɔːθ wɪnd/ noun a wind blowing from or coming from the north. (Note: A wind is named after the direction it comes from.)

nose /nəʊz/ noun the extreme forward end of the aircraft.

nose cone /nəʊz ˈkɔn/ noun the foremost part of the nose of a multi-engine aircraft which may house electronic equipment, but not an engine.

nose dive /ˈnəʊz dʌv/ noun an extremely steep descent by an aircraft front first.

nose-dive /ˈnəʊz dʌv/ verb to fall steeply with the front end pointing downwards.

nose gear /nəʊzɡeə/ noun the nose wheel and supporting struts and linkages.

nosewheel /ˈnəʊzweɪl/ noun the undercarriage wheel at the front of the aircraft.

no-smoking sign /ˈnəʊz ˈsmɔːkɪŋ sɛŋ/ noun a sign, usually lit-up, warning passengers and crew that smoking is not allowed.

note /nəʊt/ noun 1. a brief message on a piece of paper. There’s a note on your desk. 2. a brief comment made on paper about something that you are reading, listening to, or watching. Make notes while you watch the video recording.

notice /ˈnəʊtɪs/ noun 1. a written or spoken announcement. 2. a formal warning or notification to give notice to inform an employee or employer in advance and in writing, of a termination to a period of employment. As a result of the accident, the instructor was given three months’ notice. The student pilot is grounded until further notice the student pilot cannot fly again until told by those in authority that he or she can continue.

As a result of the accident, the instructor was given three months’ notice. The student pilot is grounded until further notice the student pilot cannot fly again until told by those in authority that he or she can continue.

1. a short comment or explanation.

2. to write down.

3. to observe carefully, to take notice.

4. a brief comment made on a piece of paper.

5. a musical tone of definite pitch.

The note of the engine changes as rpm (revisions per minute) is increased.

Make notes while you watch the video recording.

To observe carefully, to take note. Note that true north is always along a meridian.

While... immediately you become unsure of your position, note the time and, if you are in touch with an ATC unit, especially a radar unit, you should request assistance’ [Civil Aviation Authority, General Aviation Safety Sense Leaflet].
noticeable

doing the pre-flight checks, Captain Smith noticed that there was a leak of hydraulic fluid from one of the brake cylinders.

noticeable /ˌnɔʊtɪsəb(ə)l/ adjective catching the attention, easily noticed ○ a noticeable increase an increase which is important enough to be observed ○ There was a noticeable improvement in the trainee’s recent exam results.

notice board /ˈnɔʊts bɔːd/ noun a usually wooden board in a corridor or classroom, etc., where information on paper can be displayed

notification /ˌnɔtɪfɪˈkeɪʃ(ə)n/ noun the act of informing somebody about something ○ Notification of the new procedures will follow in a few days. ○ She received notification that she had been accepted for the job.

notify /nəˈtɪfɪ/ verb to inform ○ Students were notified of their exam results by post. ○ The authorities must be notified of all in-flight incidents.

nozzle /ˈnɔːz(ə)l/ noun a projecting part with an opening at the end of a pipe, for regulating and directing a flow of fluid ○ The nozzle of a portable fire extinguisher should be pointed at the base of the fire.

nucleus /ˈnjuːklɪəs/ noun the central part around which other parts are grouped ○ An atom consists of a nucleus with orbiting electrons. ○ Condensation occurs on very small particles suspended in the air which are known as condensation nuclei. (NOTE: The plural form is nuclei.)

null /nʌl/ noun an instrument reading of zero ○ the null position the zero position ○ Nulls are used for direction sensing because they are better defined than the maxima.

numerical /njuːˈmerɪk(ə)l/ adjective referring to numbers or digits

numerical value /njuːˌmerɪk(ə)l ˈvɛljuː/ noun a number

numerous /ˈnjuːmərəs/ adjective very many, a lot ○ Large transport aircraft have numerous clearly-marked exits to facilitate rapid evacuation of passengers. ○ Numerous refinements to the simple actuator will be found in use.

nut /nʌt/ noun a metal ring which screws on a bolt to hold it tight ○ Turn the nut anticlockwise to loosen it.
OAT abbreviation 1. operational air traffic 2. outside air temperature
obey /ˈbɛ/ verb 1. to carry out or comply with a command □ Pilots must obey landing instructions. 2. to follow a physical law □ Winds obey Buys Ballot’s Law.
OBI abbreviation omni-bearing indicator
object /ˈɒbdʒekt/ noun 1. something that you can touch and see and that has a particular form and dimensions □ Any given object will collect more ice when travelling at high speed than at low speed. 2. intention or aim □ The object of the briefing is to inform all aircrew of the new procedures. ■ verb /əbˈdʒekt/ to raise or voice opposition □ Staff objected to the introduction of longer working hours.
oblong /ˈoblɒŋ/ adjective rectangular □ an oblong piece of aluminium ■ noun a rectangle
OBS abbreviation omni-bearing selector
obscure /ˈɒbskjʊər/ adjective not clearly understood □ The explanation was obscure the explanation was difficult to understand because it wasn’t clear ■ verb to make difficult to see □ Deposits of ice crystals on the windscreen will obscure vision.
obscured /ˈɒbskjʊəd/ adjective □ sky obscured a meteorological term to mean that fog or mist prevents sight of the sky
observation /əbˈzeɪʃən/ noun careful watching □ The type of cloud is established by observation and comparison with cloud photographs.
observe /əbˈzɛv/ verb to watch carefully □ Local wave action can be observed from a height of 200 feet. □ Wing deflection can be observed from the passenger cabin.
observer /əbˈzɛvə/ noun a person working in a meteorological station who assesses weather conditions by visual means □ Meteorological visibility is the greatest horizontal distance at which objects can be seen and recognised by an observer on the ground with normal eyesight and under conditions of normal daylight illumination.
obstacle /ˈɒbstækl/ noun something which blocks a path or prevents progress □ Low frequency transmissions can penetrate obstacles such as mountains. □ Knowing the heights of obstacles en route, it must be ensured that in the event of an emergency, the flight may be continued in safety.
obstacle clearance /ˈɒbstæklkləri/ noun the fact of being at a sufficient height to be able to fly over any obstacles in the area
obstruct /əbˈstrʌkt/ verb to block a path or to prevent the progress of something □ Bags and luggage must not obstruct the aisles. □ A safety valve is normally provided, in case the water separator assembly becomes obstructed by ice.
obstruction /əbˈstrʌkʃən/ noun 1. the act or process of obstructing □ The glidepath antenna cannot be placed close to the centre line of the runway because it would cause an obstruction. 2. something which blocks a path or prevents progress □ Before start-up, the
obtain /ˈɒbˈteɪn/ verb to acquire, to get
○ Telephone the meteorological office in order to obtain the latest weather forecast.
○ The probes are positioned in the gas stream in order to obtain an accurate temperature reading.

obvious /ˈɒbviəs/ adjective clear and easily seen or understood ○ It is obvious that high ground will disturb the smooth horizontal flow of air.

occasion /əˈkɛʃ(ə)n/ noun the time at which an event or happening occurs ○ In recent months the aircraft suffered two engine failures, on the first occasion the aircraft force-landed safely.
○ The maiden flight of an aircraft is a great occasion.
○ on occasions sometimes

occasional /əˈkɛʃ(ə)nl/ adjective happening from time to time ○ occasional turbulence turbulence happening from time to time

occluded front /əˈklʊddɪd f rɑːnt/ noun a weather front created when air is forced upward from the Earth’s surface, as when a cold front overtakes and undercuts a warm front ○ Jet streams are very rare near occluded fronts because of the much smaller temperature gradient across the fronts.

occlusion /əˈklʊʒ(ə)n/ noun the forcing of air upward from the Earth’s surface, as when a cold front overtakes and undercuts a warm front ○ If the air ahead of the warm front is less cold than the air behind the cold front, the cold front will undercut the less cold air and form a cold occlusion.

occupant /ˈɒkˈjʊpənt/ noun a person who has a seat in an aircraft ○ occupants the crew plus passengers ○ In-flight emergency procedures are designed to successfully combat airborne emergencies which threaten the safety of the aircraft and its occupants.
od number, noun: a number which cannot be exactly divided by two, e.g.: 1, 3, 5, 7, etc. A (battery) cell contains an odd number of plates.

OEM: abbreviation original equipment manufacturer

offer, noun: something, e.g. a sum of money, that is presented for acceptance or rejection. He made an offer of $85,000 for the aircraft. verb 1. to show readiness to do something. He offered to pick up the tickets in advance. 2. to present for acceptance or rejection. The company offered her a job and she accepted it. 3. to provide. The battery offers a short term power capability.

official: referring to an authority, such as the government or a recognized organization. An official weather report a weather report produced by a meteorological station. noun: a person employed by a government authority or a corporation. An official of the civil aviation department will be visiting today.

offshore, adjective: at a distance from the shore. Compare onshore wind.

omni-bearing indicator, noun: a cockpit instrument that displays VOR information and is used for radio navigation. Abbreviation OBI.

omni-bearing selector, noun: a knob on an omni-bearing indicator which the pilot turns to select a radial from a VOR station. Abbreviation OBS.

opaque, adjective: a very-high-frequency radio navigation network that allows pilots to choose and fly on any bearing relative to a transmitter on the ground.

onshore, adjective: towards the coast.

onshore wind, noun: a wind which blows from the sea towards the coast. Compare offshore wind.

opacity, noun: the state of not allowing light to pass through. Sometimes, it is possible to estimate the depth and opacity of the layer of mist or fog from the ground observations.

opacity, adjective: not allowing light to penetrate or pass through. Rime ice is an opaque, white, granular ice which forms on leading edges.
opening

opening /ˈop(ə)nɪŋ/ noun 1. a space which acts as a passage through which something or somebody can go o an inlet valve opening 2. a formal start of operation o the opening of the new flying school 3. a vacancy for a job o There’s an opening for a new chief ground instructor.

open-skies /ˌɒpənˈskeɪz/ adjective referring to a policy of allowing aircraft belonging to any country to fly over an area, without restrictions on surveillance of military installations

operate /ˈɒpəreɪt/ verb 1. to control the working of o The control column operates the ailerons and elevators. o The flaps are operated by a switch. 2. to use or manage o The airline operates a fleet of Boeing aircraft. 3. to perform or function o Jet transports operate at high altitudes. 4. to perform a surgical procedure, by cutting into the body o The surgeon operated on the patient.

operating jack /ˈɒpəreɪtɪŋ dʒæk/ noun a device which converts rotary motion into linear or reciprocating motion in order to move heavy control surfaces

operating weight /ˈɒpəreɪtɪŋ wɛt/ noun the total mass of aircraft ready for flight but excluding fuel and payload o The type of undercarriage fitted to an aircraft is governed by the operating weight.

operation /ˈɒpəreɪʃ(ə)n/ noun 1. the process of making something work o The operation of the ignition system in a light aircraft is quite simple. 2. long-haul operations flying over long-distance routes 3. an effect o to come into operation to come into effect o The new procedures come into operation on 1st January. 4. a surgical procedure o The doctor performed an operation. 5. a procedure such as addition or subtraction ‘…periodically check the carburettor heating system and controls for proper condition and operation’ [Civil Aviation Authority, General Aviation Safety Sense Leaflet]

operational /ˈɒpəreɪʃ(ə)n(ə)l/ adjective 1. working or functioning o Air traffic control facilities were not operational at the time of the accident. o the operational life of the aircraft the expected working life of an aircraft 2. ready for use, referring to an aircraft in a suitable condition to fly o an operational aircraft an aircraft that can be used for its assigned purpose

operational air traffic /ˈɒpəreɪʃ(ə)n(ə)l əˈtræfɪk/ noun flights operating in accordance with military air traffic service procedures. Abbreviation OAT

operations department /ˈɒpəreɪʃ(ə)n(ə)dz,deptmənt/ noun the part of an airline or airport organisation which deals with flight operations

operative /ˈɒpərətɪv/ adjective functioning or working o The system is now operative after the recent maintenance.

operator /ˈɒpərətər/ noun a person who operates or uses equipment o A ring graticule around the edge of the cathode ray tube enables the operator to read the bearing directly.

oppose /ˈɒpəz/ verb 1. to work against o In level flight, the force of lift opposes the force of gravity. 2. to reject, be in conflict with or try to prevent o The local people oppose the building of the new runway. 3. as opposed to in contrast with o over sea as opposed to over land

opposite /ˈɒpəzɪt/ adjective 1. situated or placed directly across from something, facing o opposite sides of a building the back and front of a building 2. completely different, the reverse o For every action there is an equal and opposite reaction. o something completely different, the reverse o The opposite of a katabatic wind is an anabatic wind. o The opposite of starboard is port. o going in opposite directions 1. moving away from each other 2. moving towards each other

opposition /ˌɒpəˈzɪʃ(ə)n/ noun o in opposition against o Drug acts in opposition to thrust. o The electromotive force that is produced by all motors is in opposition to supply voltage and is

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order /ɔrɪd/ noun 1. an instruction given as a command by somebody in authority. 2. the sequence of occurrence. 3. the firing order of sparking plugs in a piston engine is 1, 3, 4, 2. 4. alphabetical order arrangement in which words beginning with letter A come first, followed by those beginning with letter B, then C, etc. 5. numerical order arrangement in which the lowest numbers (1, 2, 3, etc.) come first and higher numbers (25, 26, 27, etc.) come later. 6. a condition or state. 7. Although the aircraft is old, it is in good working order. 8. out of order not working. 9. The telephone is out or order. 10. in the order of approximately. 11. VOR (very high frequency omni-directional radio range) beacons of 200 watts have a range in the order of 200 km (nautical miles). 12. in order to so as to. 13. Indicated airspeed must be corrected in order to obtain true airspeed. 14. verb. 1. to give a command. 2. Before impact, the captain will order the crew to secure themselves at their assigned emergency stations. 2. to put in a sequence. 3. Order the items in importance from 1 to 10.

organisation /ɔrɡənaɪz(ə)ʃən/, organization noun 1. an association of people working together for the same cause. 2. The World Meteorological Organization. 3. The International Civil Aviation Organization. 4. the act of putting things into a structured and systematic form. 5. The organisation of training materials for the new self-access learning centre is under way. 6. The planning of Captain Scott is responsible for the organisation of examinations.

organise /ɔrɡənaɪz, organize verb 1. to arrange into a system. 2. to plan. 3. The trip was well organised and everybody enjoyed themselves.

orientate /ɔrɪənteɪt/ verb to locate in relation to the compass. 1. The first step in map reading is to orientate the chart by relating the direction of land features to their representation on the chart. 2. The horizontal situation indicator (HSI) presents a selectable, dynamic colour display of flight progress and plan view orientation.

orifice /ɔrɪfɪs/ noun an opening, mouth or vent. 1. The liquid expands and builds up a pressure differential across an orifice which leads to the expansion chamber.

origin /ˈɔrɪdʒɪn/ noun 1. a source, the place where something starts. 2. An air mass takes on the characteristics of its place of origin. 3. the base from which a map projection is drawn. 4. The value of convergence used is correct at the parallel of origin.

original /ˈɔrɪdʒɪn(ə)/ adjective before all others, the first. 1. The atmosphere is said to be stable if, when a parcel of air is displaced vertically, it tends to return to its original level.

organise /ɔrɪgənaɪz/ verb to be created or to come into being. 1. Tropical revolving storms originate within 5–15° of the equator.
orographic /ˌɒrəˈɡræfɪk/ adjective referring to mountains or orographic uplift the lifting of air masses in contact with mountainous areas

orographic cloud /ˌɒrəˈɡræfɪk 'klaʊd/ noun a cloud formed by air being forced upward over mountainous areas

orthomorphic /ˌɔrθəˈmɔːrɪfɪk/ adjective of the correct shape o An orthomorphic chart is one which has meridians and parallels which intersect at right angles and, at any point on the chart, the scale must be the same in all directions.

orthomorphism /ˌɔrθəˈmɔːrɪfɪzm/ noun a shape representation on a map o Orthomorphism means that bearings may be measured correctly at any point on a chart.

oscillate /ˈɒsəleɪt/ verb 1. to move regularly between extremes 2. to increase or decrease regularly so as to produce oscillations o Instability protection is incorporated to guard against oscillating outputs from the alternators.

oscillation /ˌɒsəˌleɪʃ(ə)n/ noun 1. a regular movement between extremes o Ridge waves can be thought of as oscillations about the stable state of the undisturbed air flow with the range of hills providing the disturbance. 2. a regular increase and decrease of electrical current o The supply is subject to oscillation.

oscillator /ˌɒsəˈleɪtər/ noun an electronic circuit that produces a pulse or a signal at a particular frequency o The local oscillator replicates the radio frequency of the frequency generator at the transmitter.

out /aʊt/ adverb = out of away from, no longer in

outboard /ˈaʊtˈbaʊd/ adverb in a direction away from the centre of an aircraft ■ adjective situated away from the main body of an aircraft and towards the wing tips

outbound /ˈaʊtˌbaʊnd/ adjective, adverb towards a destination away from a VOR o The aircraft flies outbound from the beacon along the airway and inbound to the facility at the other end of the leg. o outbound traffic aircraft flying away from an airfield

outbreak /ˈaʊtbrɛk/ noun a sudden start o Showers are local outbreaks of precipitation from detached cumulus or cumulonimbus. o Hand operated fire extinguishers are provided to combat any outbreaks of fire in the flight crew compartment and passengers cabins.

outer /ˈaʊtə/ adjective 1. external o Pneumatic de-icer boots are made from vulcanised rubber fabric with an outer covering of neoprene. 2. positioned away from the centre o Winds near anticyclones are normally light near the centre, but tend to be stronger towards the outer edges. 3. = outer wing the part of the wing nearest the tip

outer marker /ˈaʊtər ˈmɑrkə/ noun an ILS marker beacon, usually on centre line of approach at about 4.5 nm from the runway threshold

outflow /ˈaʊtfloʊ/ noun flow in an outward direction o The outflow valve is controlled by the cabin pressure controller

outgoing /ˈaʊtˈɡoʊɪŋ/ adjective going out o There is a fall of temperature until about one hour after dawn when incoming solar radiation balances outgoing terrestrial radiation. Opposite incoming

outlet /ˈaʊtˈlɛt/ noun a passage for exit or escape o The air leaves the compressor outlet and passes through a matrix assembly of the secondary heat exchanger. o When the controlling super-charger outlet pressure is reached, the capsule is compressed sufficiently to open its bleed valve.

outline /ˈautlɛn/ noun 1. a line around the shape of something o Warning labels have a solid red outline. 2. a shape o At low level, features are most easily recognised from their outline in elevation. o Cumulus cloud has detached domes or towers which are generally dense and have sharp outlines. ■ verb to explain simply and briefly o The changes in conditions outlined in the next paragraph.

Hand operated fire extinguishers are provided to combat any outbreaks of fire in the flight crew compartment and passengers cabins.
out-of-balance turn / fut \( \text{\textasciitilde} \) turn noun a turn in which the aircraft "skids" upwards and outwards from the turn or "skips" inwards and downward. o During an out-of-balance turn, the ball in the slip indicator will be deflected to the left or right.

out of trim / fut \( \text{\textasciitilde} \) trim adjective referring to a situation in which the aircraft is not in static balance in pitch, so that if the pilot releases the yoke or control stick, the aircraft will start to climb or descend

output / fut put/ noun the product of a process. o The function of the supercharger is to increase the power output. o The power output of an engine depends on the weight of mixture which can be burnt in the cylinders in a given time.

outrigger / aut\( \text{\textasciitilde} \)trig\( \text{\textasciitilde} \) noun a projection attached to an aircraft to stabilise it or to support something

outward / aut\( \text{\textasciitilde} \)ward/ adjective moving away from the centre or starting point. o The piston draws fluid into the cylinders on the outward stroke and expels fluid into the system on the inward stroke. o bound

outwards / aut\( \text{\textasciitilde} \)wards/ adverb away from the centre or starting point, towards the outside. o The door opens outwards. (NOTE: The US English is outward.)

overall / ov\( \text{\textasciitilde} \)er\( \text{\textasciitilde} \)/ adjective including everything. o The total aerodynamic losses result in an overall turbine efficiency of 92%. o Although the student failed in one of the five exams, her overall result was a pass. o Normally, the test flight was a success.

noun / ov\( \text{\textasciitilde} \)er\( \text{\textasciitilde} \)/ a one-piece item of protective clothing. o The engineer was wearing an overall to prevent his clothes from getting dirty.

overalls / ov\( \text{\textasciitilde} \)er\( \text{\textasciitilde} \)/ plural noun protective trousers with a bib and straps over the shoulders. o Wear overalls to protect your clothes.

overcome / ov\( \text{\textasciitilde} \)k\( \text{\textasciitilde} \) ven/ verb to beat, to conquer, to win against. o The effects of anoxia at high altitudes can be overcome by breathing through a mask. o Drag must be overcome with thrust in order for an aircraft to increase speed.

overload / ov\( \text{\textasciitilde} \)l\( \text{\textasciitilde} \)aud/ noun an excessive amount of work or electricity. o Resettable circuit protective devices should be designed so that when an overload or circuit fault exists, they will open the circuit. o verb / ov\( \text{\textasciitilde} \)l\( \text{\textasciitilde} \)aud/ to exceed, to exceed the capacity of a system.

1. overloaded

2. overloading
overload operations 166
to load a device or system, such as an
electrical circuit, with too much work;
to demand more than a system is capa-
bile of. Operating pressure is main-
tained in that part of the system which
leads to the selector valves, and some
method is used to prevent overloading
the pumps. 2. to load too heavily. The
aircraft failed to gain height after take-
off because it was overloaded.

overload operations /ˈɔvələud
ˌopər(e)ʃ(ə)n/ noun operation of air-
craft in unusual situations when take-
of weight exceeds the permitted maxi-
mum.

override /ˌɔvərˈraɪd/ verb to take
over control of the operation of an auto-
matic device or system. A circuit-pro-
tective device must not be of a type
which can be overridden manually. (NOTE:
overriding – override – over-
ridden)

overrun /ˌɔvərˈran/ noun a cleared
level area at the end of a runway, avail-
able in case a plane does not stop
quickly enough.

overshoot /ˌɔvəʃʊt/ verb to fly
past a target. The pilot tried to land but
the aircraft overshot the runway. (NOTE:
overshooting – overshot)

overspeed /ˌɔvəsˈpɪd/ verb to go
too fast. A fault in the constant speed
drive unit causes the generator to over-
speed. A noun /ˈɔvəsˈpɪd/ a speed that
is too fast. Overspeed is usually a fault
in the constant speed drive unit which
causes the generator to overspeed.

overspeeding /ˌɔvəsˈpɪdɪŋ/ noun
the act of going too fast. Overspeeding
of the engine is prevented by a governor
in the fuel system.

overstress /ˌɔvərˈstriːs/ verb to sub-
ject to too much force. It takes less g
force to overstress a heavy aircraft than
a light one.

owing to /ˈəʊɪŋ tu/ preposition
because of. Integral tanks are now
favoured for aircraft owing to the very
high utilisation of space and saving of
weight. Owing to the aerodrome being
unserviceable, the landing was made at
another aerodrome some distance away.

oxidation /ˌɒksɪdəʃ(ə)n/ noun the
combination of a substance with oxy-
gen, with loss of electrons. When alu-
mínium surfaces are exposed to the
atmosphere, a thin invisible oxide skin
forms immediately that protects the
metal from further oxidation.

oxide /ˈɒksaɪd/ noun a compound of
an element with oxygen. When alu-
mínium surfaces are exposed to the
atmosphere, a thin invisible oxide skin
forms immediately that protects the
metal from further oxidation.

oxidise /ˌɒksɪdaɪz/ oxidize verb to
form an oxide by the reaction of oxygen
with another chemical substance. Over
a period of time, the metal is oxidised by
contact with air.

oxygen /ˈɒksɪdʒ(ə)n/ noun a colour-
less, odourless gas, which is essential to
human life, constituting 21% by volume
of the Earth’s atmosphere. Our bodies
can get oxygen through the lungs. At
very high altitudes the flying pilot must
be on oxygen at all times, unless an air-
craft dispensation has been obtained.
(Note: The atomic number of oxygen is
8.)

ozone /ˈɔːzoʊn/ noun a poisonous
form of oxygen found naturally in the
atmosphere which is toxic to humans at
concentrations above 0.1 parts per mil-
lion. The maximum concentration of
ozone is between 20 and 25 km above
the Earth’s surface. Symbol O₃
PA **abbreviation** public address

**Pacific Standard Time** /pəˈstɛndərɪ tɛɪm/ noun the time zone of the west coast area of the USA and Canada, 8 hours behind Greenwich Mean Time

**Pack** /pak/ noun 1. a detachable system  
Circuit packs consist of basic decision-making elements, referred to as logic gates, each performing combinatorial operations.  
A power pack system is one in which most of the major components, with the exception of the actuators and, in some systems, the pumps, are included in a self-contained unit.  
2. a small package containing a set number of items  
The survival pack includes heliographs, sea marker dyes, day/night distress flares and parachute flares.

**Pad** /pæd/ noun same as helipad

**Pair** /peə/ noun two matched items, similar in appearance and function  
A brake control valve usually contains four elements, one pair for the brakes on each side of the aircraft, to provide duplicated control.

**Pancake** /ˈpæŋkəki/ (informal) noun  
same as pancake landing  
verb to make a pancake landing, or cause an aircraft to make a pancake landing

**Pancake landing** /ˈpæŋkəki ˈlændɪŋ/ noun a landing in which an aircraft drops suddenly straight to the ground from a low altitude, usually because of engine failure

**Panel** /ˈpæn(ə)l/ noun 1. a flat, often rectangular piece of the skin of the aircraft  
Access to the engine compartment is normally via hinged cowling panels.  
2. a board with switches, dials, control knobs, etc.  
The pilot is trained to scan an instrument panel.

**Panic** /ˈpænɪk/ noun a sudden overpowering fear or terror  
In order to prevent mass panic amongst passengers in an emergency situation, crew may have to use force.

**PAPI** **abbreviation** precision approach path indicator

**PAR** **abbreviation** precision approach radar

**Parachute** /ˈpærəʃuːt/ noun  
a device used to slow down free fall from an aircraft, consisting of a light piece of fabric attached by cords to a harness and worn or stored folded until used in descent

**Parachute flare** /ˈpærəʃuːt fleə/ noun  
a distress signal, suspended from a parachute to allow more time for the flare to be seen, which is fired to a height of 1200 ft

**Parachutist** /ˈpærəʃuːtɪst/ noun  
a person who returns to the ground from an aircraft using a parachute

**Parallel** /ˈpærəlel/ adjective 1. side by side and having the same distance between them at every point  
As one aircraft flew round to attempt another landing, a Boeing 757 was taking off on the parallel runway.  
The runway is parallel to the main road.  
2. **in parallel** arranged so as to join at common points at each end  
When batteries are connected in parallel, voltage remains constant but capacity increases.

**Parallels of latitude** imaginary lines of
parameter 168

constant latitude around the Earth’s surface

**parameter** /ˈpærəmətər/ noun a set of measurable values such as temperature which define a system and determine its behaviour. ◇ Parameters required by the crew to set and monitor engine thrust are permanently displayed on the screen.

**parasite drag** /ˈpærəsaɪt d्रæg/ noun a component of total lift, caused by friction between the airflow and the structure of the aircraft. ◇ Parasite drag increases as speed increases.

**parcel** /ˈpɑːsəl/ noun a small package ◇ parcel of air a small body of air. ◇ When a parcel of air is heated, its volume increases and its density decreases thus there is a fall in pressure.

**park** /pɑːrk/ verb to leave a vehicle such as a car or an aircraft in a particular place when no one is using it. ◇ Park beside the Cessna 150.

**parking brake** /ˈpɑːkɪŋ brɑːk/ noun a brake that is set, often by hand, when the aircraft is stationary for a period of time. ◇ Make certain that the parking brake is on before doing engine run-up checks. ◇ Light aircraft should be left with parking brakes off so that they can be moved quickly in the event of a fire in the hangar.

**partial** /ˈpɑːrʃəl/ adjective in part, not fully. ◇ partial closing of an undercarriage door not full closing of the doors. ◇ partial filter blockage incomplete blockage of a filter

**particle** /ˈpɑːr(t)ɪkəl/ noun a very small piece or part. ◇ Solid particles in the atmosphere include sand, dust, volcanic ash and atmospheric pollution. ◇ Hailstones start as ice particles in the upper part of a cumulonimbus cloud.

**particular** /ˈpɑːtɪkjələr/ adjective special, given, distinct, not general. ◇ a particular time ◇ a particular speed. ◇ The size and number of valves required for a particular type of aircraft is governed by the amount of air necessary for pressurisation and air conditioning.

**pass** /pɑːs/ noun 1. a badge or document which allows one to enter a restricted or prohibited area. ◇ a security pass 2. a successful result in an exam.

**verb** 1. to move ◇ Tropical storms dissipate as they pass from sea to land. ◇ The air leaves the compressor outlet and passes through a matrix assembly. 2. ◇ to pass information to give information to a pilot to give information via radio to an air traffic control facility. 3. ◇ to pass an exam to be successful in an exam. 4. ◇ to pass a book to someone to pick up and give a book to somebody nearby. 5. ◇ to pass another aircraft to move past another aircraft.

**passage** /ˈpɑːsɪdʒ/ noun 1. movement over, along, or through something. ◇ The passage of air over a turbine is used to power a small emergency generator. ◇ The passage of a trough is marked by a sharp veer in the wind. 2. a channel through which something can pass. ◇ Liquid cooling is achieved by circulating a liquid around the cylinder barrels, through a passage formed by a jacket on the outside.

**passenger** /ˈpɑːsɪndʒər/ noun a person who travels in an aircraft, car, train, etc., and has no part in the operation of it. ◇ The Piper Archer has seating for a pilot and three passengers.

**passenger aircraft** /ˈpɑːsɪndʒər ˈeɪkrɪft/ noun an aircraft specially designed for carrying people.

**passive** /ˈpɑːsv/ adjective receiving an action but taking no action. ◇ In primary radar systems, the target is passive. ◇ passive state referring to a system or device which may be switched on or ‘live’ but not reacting to any input. Opposite active.

**pass-mark** /ˈpɑːs mɑːk/ noun the mark which separates those who fail and those who pass an examination.

**passport control** /ˈpɑːspɔrt kənˌtrəʊl/ noun 1. the action of checking passports of people arriving in or leaving a country. ◇ We now have to go through passport control. 2. the place where passports are checked when people arrive in or leave a country.
Patches of fog made identification of ground features difficult. Long-range radars are little affected by weather interference and have good cloud penetration characteristics. Only a small percentage of passengers take in the pre-departure safety briefing. The pilot performed a loop and a 24 hour period. Long-range radars are little affected by weather interference and have good cloud penetration characteristics. Only a small percentage of passengers take in the pre-departure safety briefing.

**penalty** /ˈpɛnləti/ noun 1. an unwanted result of an action. The penalty of using a circular polarisation transmission may be some loss of definition. 2. a punishment or fine. Fuel penalties can be incurred if fuel surplus to requirements is carried.

**penetrant** /ˈpɛntrənt/ noun something which forces or gets entry into an area or substance. Penetrant dye inspection is a non-destructive test used mainly for the detection of defects open to the surface. Penetrant oil can be used to loosen rusty bolts, etc.

**penetrate** /ˈpɛntrət/ verb to force a way into. Cool air from the Atlantic can sometimes penetrate far into Europe. Occasionally, thunder cloud will penetrate through the tropopause.

**penetration** /ˌpɛnˈtrɪʃən/ noun the act of forcing a way into or through. Long-range radars are little affected by weather interference and have good cloud penetration characteristics.

**per** /pɜːr, pə/ preposition for each, for every. Feet per minute (fpm), gallons per hour (gph).

**per cent** /ˈpɜːr ˈsɛnt/ noun the number out of each hundred. Fifty per cent (50%) half or ½ or 50 out of 100. Twenty-five per cent (25%) one quarter or ¼ or 25 out of 100.

**percentage** /ˈpɜːrsɛntɪdʒ/ noun 1. a fraction with 100 as the understood denominator. Volumetric efficiency is usually expressed as a percentage. Part of the total. Only a small percentage of passengers take in the pre-departure safety briefing.

**perform** /pɜːrˈfɔːm/ verb to do. Circuit breakers perform the same function as a fuse. The pilot performed a loop to conclude his flying display.

**performance** /pɜːrˈfɔːrnsm/ noun the ability of a system such as an aircraft or an engine to function as required. The performance of the turbojet engine is measured in thrust produced at the propelling nozzle or nozzles.

**period** /ˈpəriəd/ noun a length of time. A 24 hour period or a period of 3 minutes.
periodic /ˈpɜːriədɪk/ adjective happening from time to time or at regular intervals, occasional ○ periodic maintenance maintenance made at a particular time interval ○ Periodic calibration of ILS (instrument landing system) installations is recommended.

peritrack /pəˈrɪtræk/ noun same as taxiway

permanent /ˈpɜːrmanənt/ adjective lasting or remaining without change ○ permanent deformation damage to a structure which must be repaired by replacing the damaged part ○ permanent magnet a metal component which always has a magnetic influence. Opposite temporary

permissible /pəˈmɪsɪbl/ adjective allowable, not prohibited ○ Great care must be taken to ensure that the aircraft operates within regulated or permissible weight limits.

permission /pəˈmɪʃən/ noun consent or authorisation ○ A passenger who is drunk can be refused permission to board the aircraft.

permit noun /pəˈmɪt/ a document or pass that is proof of official permission to do or have something ○ You need a permit to enter the restricted area. ○ verb /pəˈmɪt/ to allow ○ When oxygen mask are pulled down to the usable position, valves are opened which permit oxygen to flow. ○ Information passed to the operations department will be sufficient to permit the flight to be planned.

Permit to Fly /pəˈmɪtt tø ˈflæ/ noun a certificate issued by the Civil Aviation Authority in the UK for aircraft which do not qualify for a Certificate of Airworthiness

perpendicular /pəˈpɜːrən̩dɪkʃəl/ adjective at right angles or 90° to a base or a line ○ The vertical grid lines are perpendicular to the horizontal ones. ○ The air is acted upon by a force perpendicular to the isobars in the direction of low pressure.

persist /pəˈstɪst/ verb 1. to continue to exist ○ Snow cover tends to persist on north-facing slopes of mountains. 2. to continue without giving up ○ She persisted with her request until it was granted.

persistence/pəˈstɪstəns/ noun 1. the fact of continuing to exist and not disappearing ○ The persistence and movement of cols is governed by the movement of the adjacent pressure systems. 2. the act of continuing to do something and not giving up ○ He managed to overcome his difficulties through persistence and hard work.

personnel /pəˈsɜːnəl/ noun a body of people involved in a common purpose such as work ○ Smoke masks are available for use by personnel within the aircraft.

PFCU abbreviation power flying control unit

PFD abbreviation primary flight display

phase /fɛtʃ/ noun 1. a stage or part ○ An emergency situation may occur during any phase of the flight. 2. the relationship between voltage and current ○ The CSDU (constant speed drive unit) drive shaft turns the permanent magnet generator and single phase AC (alternating current) is induced in the winding on the stator.

phase angle /fɛtʃ, æŋ(ə)l/ noun the difference between two periodic phenomena expressed as an angle

phase difference /fɛtʃ, dɪfərəns/ noun a measure of phase angle from any VOR radial related to that on bearing 360°

phenomenon /fəˈnəmnən/ noun an occurrence or circumstance which can be perceived by the senses ○ Metal fatigue is not a modern phenomenon. ○ Of all meteorological phenomena, thunderstorms present the greatest hazard to aviation. (Note: The plural form is phenomena.)

photographic film /ˌfoʊtəˈɡrəfɪk/ film/ noun a celluloid material usually contained in a small metal cylindrical casing for use in cameras

physical /fɪzɪk(ə)l/ adjective 1. referring to matter and energy or the sciences dealing with them, especially physics ○ Oxygen and nitrogen together constitute 99% of the atmosphere and
obey the physical laws as any other gas.
2. referring to the human body ○ In some aircraft operating for long periods at high altitudes, physical discomfort may arise from low relative humidity. ○ physical fitness the state of health of the body
PIC abbreviation pilot in command
piece /ˈpiːs/ noun a bit, portion or part ○ The upper and lower skin panel of each wing can be made in one piece. (note: Piece is often used to show one item of something which has no plural: a piece of equipment, a piece of information.) ○ piece of equipment an item of equipment ○ Early rescue depends on rapid location of survivors and the survival beacon is the most important piece of equipment in this regard.
pilot /ˈpaɪlət/ noun 1. a person who operates an aircraft in flight 2. the part of a system or device that leads the whole ○ verb to operate or guide ○ to pilot an aircraft
COMMENT: A pilot holding a private or commercial pilot’s licence may log as pilot in-command time only the flight time during which he or she is the only operator of the aircraft’s flying controls.
pilot in command /ˈpaɪlət ɪn ˈkəmənd/ noun the pilot who has responsibility for the operation and safety of the aircraft during flight time. Abbreviation PIC
Pilot’s Operating Handbook /ˈpaɪlət ˈɒpəreɪtɪŋ ˈhændbʊk/ noun a book giving details of an aircraft with recommendations and instructions regarding its use. Abbreviation POH
pin /pɪn/ noun a short, usually cylindrical metal rod
pinpoint /ˈpɪnˌpɔɪnt/ noun a visual observation of the precise position of an aircraft ○ The pinpoint is a very positive means of establishing position, as long as the feature is properly identified. ○ verb to draw attention to ○ to pinpoint a problem
pipe /paɪp/ noun a hollow cylinder or tube to convey a fluid ○ a delivery pipe ○ an exhaust pipe
pipeline /ˈpaɪplین/ noun a long hollow cylinder or tube to convey a fluid such as oil or natural gas ○ The incompressibility of liquids enables force to be transmitted long distances through pipelines.
piston /ˈpstən/ noun a solid cylinder that fits into a larger cylinder and moves under fluid pressure, as in petrol and diesel engines or compresses fluids, as in pumps and compressors
piston engine /ˈpstən ˌendʒɪn/ noun a petrol or diesel engine in which pistons are moved by combustion of fuel, this reciprocating movement producing rotating movement
piston ring /ˈpstən rɪŋ/ noun one of the metal rings which seals the space between the piston and the cylinder wall ○ There should be a loose fit between the cylinder and the piston, the difference being taken up by the piston rings.
pitch /paɪtʃ/ noun 1. a nose up/down movement of the aircraft about its lateral axis ○ If the control column is moved forward or aft, the pitch attitude of the aircraft changes. 2. the distance a propeller would advance in one rotation if there was no slip ○ fine pitch setting and coarse pitch setting angular propeller-blade settings ○ Variable pitch propellers were originally produced with two blade-angle settings – fine pitch to enable full engine speed to be used on take off and coarse pitch to allow an economical engine speed to be used for cruising. ○ verb to move about the lateral axis ○ Move the yoke fore and aft to pitch down and up.
pitch angle /ˈpaɪtʃ ənˈɡəl/ noun the angle between the blade element chord line and the plane of rotation of the propeller
pitch lock /ˈpaɪtʃ lɒk/ noun a means of holding the fine pitch stop in a prescribed position (note: Some manufacturers use the term to describe a device which locks the blades at whatever angle they are at if there is a failure of the pitch change mechanism.)
pitch trim /ˈpaɪtʃ ˈtrɪm/ noun the trim of the aircraft in the lateral axis so that
pitot head 172

there are no forward/after forces on the control stick or yoke

pitot head /ˈpɪtəʊ hɛd/ noun an externally mounted device which senses and sends airspeed information to the airspeed indicator in the cockpit

pitot-static system /ˌpɪtəʊ ˈstætɪk ,sɪstəm/ noun a pressure system for the airspeed indicator, altimeter and vertical speed indicator

pitot tube /ˈpɪtəʊ tjuːb/, Pitot tube noun an open-ended tube used to measure the speed of flow of a fluid o device to sense pitot pressure created by the movement of air over the aircraft

pivot /ˈpɪvət/ noun a short rod on which another part rotates o verb to turn on a point o The rocker arm pivots on a bearing and opens the valve

place /pleɪz/ noun 1. a space or area o Greenwich is a place on the 0° meridian. 2. a position o decimal place 3. o in place of instead of o to take place to happen o The explosion took place just before the aircraft landed. o verb to put o Place the chart on the seat next to you. o Rotate the grid to place the wind direction under true

plain /pleɪn/ adjective without pattern or marking or writing o a plain sheet of paper a sheet of paper with nothing on it

plan /plæn/ noun 1. a drawing or diagram of a place viewed from above o The horizontal situation indicator presents a selectable dynamic colour display of flight progress and plan view orientation. 2. a scheme or programme worked out in advance of putting something into operation o verb to organise a scheme or programme o Jeppesen charts are used to plan and fly a safe route to a destination

plane /pleɪn/ noun 1. an imaginary surface containing all the straight lines that connect any two points on it o The planes of parallels of latitude are parallel to the plane of the equator. o The pitch angle is the angle between the blade element chord line and the plane of rotation of the propeller. 2. an airplane (NOTE: Because of possible confusion with meaning 1, plane as in
make an electrical connection, often by inserting the plug on an electrical device such as a computer into an electrical supply socket

**plunger** /ˈplʌndʒər/ noun a machine part that operates with a thrusting or plunging movement, e.g. a piston ○ A flow indicator valve comprises a body, a spring-loaded plunger connected to an actuator arm, and a micro-switch.

**plus** /plʌs/ preposition increased, added to ○ At the selected decision height plus 50 feet, an aural alert chime sounds. ○ Four plus four equals eight (4 + 4 = 8).

**pneumatic** /ˈniːmətɪk/ adjective operating by means of air under pressure or compressed air ○ High-pressure pneumatic systems are generally fitted on the older types of piston-engine aircraft to operate the landing gear, wing flaps, wheel brakes.

**pneumatically** /niːˈmættɪkli/ adverb by using air under pressure or compressed air ○ Clamshell doors are hydraulically or pneumatically opened.

**PNR** abbreviation point of no return

**POB** abbreviation persons on board

**pocket** /ˈpɒkt/ noun same as air pocket

**pod** /poʊd/ noun a streamlined casing or housing ○ The engine bay or pod is a streamlined casing or housing.

**POH** abbreviation Pilot’s Operating Handbook

**point** /poʊnt/ noun 1. a particular figure on a scale ○ The melting point of ice is 0°C (Celsius). 2. a particular place ○ a point on a map a particular place on a map 3. the sharp end of something ○ a pencil point 4. verb 1. to direct towards ○ Point the aircraft towards the airfield. 2. to indicate direction, often with a finger ○ Point to the east 3. a point out to draw attention to ○ The instructor pointed out the dangers of not keeping a good lookout.

**pointer** /ˈpɔʊntər/ noun an indicating device on an instrument, e.g. a needle ○ The pointer centralises to indicate that the aircraft is aligned with the runway centre line.

**point of no return** /ˈpɔɪnt ə v naʊ rɪn/ noun a place on the route where the aircraft does not have enough fuel to return to the starting place ○ The point of no return is calculated before departure to cover the chance that both the terminal airfield and its alternate become unavailable during flight. Abbreviation PNR

**polar** /ˈpəʊlər/ adjective 1. located in or coming from the region around the north or south pole ○ polar air ○ a polar region ○ The greatest horizontal gradients of mean temperatures of a layer are found at the boundaries between cold polar and warm tropical air masses. 2. referring to the pole or poles of an electrical device or of a magnet ○ Bar magnets attract each other because of polar differences.

**polar diameter** /ˈpəʊlər daɪˈəmətər/ noun the distance from one pole, passing through the centre of the Earth, to the other pole ○ The Earth’s polar diameter is shorter than its average equatorial diameter.

**polar ice cap** /ˈpəʊlər aɪs ˌkeɪp/ noun the permanent area of ice at north or south pole

**polarisation** /ˌpəʊləˈreɪʃən/, **polarization** noun 1. a characteristic of light or radio or other electromagnetic waves in which the waves are aligned in one direction and show different properties in different directions ○ The antenna must have the same effective length and the same polarisation as the transmitter. 2. partial or complete polar separation of positive and negative electric charges

**polarise** /ˌpəʊləraɪz/, **polarize** verb 1. to align in one plane ○ The frequency allocation for VOR (very high frequency omni-directional radio range) is 108–117.975 MHz (megahertz) and transmissions are horizontally polarised. 2. to separate positive and negative electric charges

**polarity** /ˌpəʊləˈræti/ noun the direction of flow of flux or current in an object ○ During discharge, when the...
pole

polarity of the supply changes, the stored energy is returned to the supply. ○ polarity test a test to see which terminal is positive and which is negative.

pole /pəʊl/ noun 1. the north or south point of the Earth’s axis ○ A meridian is a line joining pole to pole. 2. a terminal, e.g. of a battery ○ negative pole ○ positive pole 3. a long, rounded piece of wood or metal ○ a flag pole

pollution /pəˈluːʃ(ə)n/ noun the presence of unusually high concentrations of harmful substances in the environment

pontoon /pɒntuːn/ noun same as float

poor /pɔːr/ adjective bad ○ poor weather conditions ○ poor visibility ○ Air is a poor conductor.

poppet valve /ˈpɒpɪt vælv/ noun an intake or exhaust valve of a piston engine, operated by springs and cams

porous /ˈpɔrəs/ adjective referring to substances which allow fluid to pass through them ○ The de-icing fluid passes through a porous plastic sheet.

port /pɔːrt/ noun 1. an entrance which is opened periodically ○ inlet port ○ As a piston in the pump moves outwards into its cylinder, it covers the inlet port and forces fluid out of the top of the cylinder. 2. the left-hand side of an aircraft when facing forwards when inside the aircraft ○ Unless an aircraft is flying in the same or exactly opposite direction to the wind, it will experience either port or starboard drift. Opposite starboard

portable /ˈpɔrtəbəl/ adjective capable of being carried in the hands ○ a portable fire extinguisher ○ The aneroid barometer is a more portable device than a mercury barometer.

portable electronic device /ˈpɔrtəbəl ˌɛlektrənɪk dɪˈvɑːs/ noun a piece of electronic equipment such as a mobile phone or laptop which is small enough to be carried onboard an aircraft, and which may cause problems with the aircraft’s systems during flight. Abbreviation PED

portion /ˈpɔrʃ(ə)n/ noun a part or section ○ A hailstone starts as a small ice particle in the upper portion of a cumulus cloud.

position /ˈpɔzɪʃ(ə)n/ noun 1. a place or location where something is ○ The Greenwich or prime meridian and the equator are the axes of the system called latitude and longitude which is used for expressing position on the Earth. 2. the setting of a control, etc. ○ the neutral position 3. in a sitting position seating n verb to place something in a special location ○ The magnetic compass is positioned away from magnetic sources.

position line /ˈpɔzɪʃ(ə)n lайн/ noun a line along which an aircraft is known to be at a particular time, usually by taking a VOR bearing. Also called line of position, navigational line

position report /ˈpɔzɪʃ(ə)n rɑːpərt/ noun a report over a known location as transmitted by an aircraft to an air traffic control station

positive /ˈpɒzɪtɪv/ adjective 1. definite, without doubt ○ The pinpoint is a very positive means of establishing aircraft position. 2. referring to a number greater than zero ○ Oil is ducted to the front of the pitch change piston and the blades move to a positive angle. 3. referring to the + symbol ○ positive terminal the terminal of a battery marked +

positive idling speed /ˈpɒzɪtɪv ˈaɪdlɪŋ spɪd/ noun idling speed selected with the throttle to ensure that the engine runs correctly without spark plug fouling ○ An adjustable stop on the throttle control ensures a positive idling speed.

possibility /ˈpɒsɪb(ə)lɪtɪ/ noun a chance occurrence ○ Anti-skid systems are designed to prevent the wheels from locking during landing thus reducing the possibility of wheel skid.

possible /ˈpɒsɪb(ə)l/ adjective capable of happening ○ If possible, control surfaces should be moved by hand. ○ There will be a possible delay. ○ Fire in a toilet could present difficulties due to the confined space and possible smoke accumulation.
potential  /ˈpotənʃəl/ adjective capable of being, but not yet in existence  
A designated fire zone is a region where a potential fire risk may exist.

possible future danger  

noun  

voltage  

Precipitation static develops due to friction between the aircraft surface and precipitation causing the aircraft to become charged to a high potential.

pound  /ˈpaʊnd/ noun a unit of weight equal to 16 ounces or 453.592 grams.

Abbreviation lb

craft

persed solid particles made of ground or otherwise finely dispersed solid particles. Dry chemical fire-extinguishers contain a non-toxic powder.

powder  /ˈpaʊdər/ noun a substance made of ground or otherwise finely dispersed solid particles.

power  /ˈpaʊər/ noun energy or force

power-assisted  /ˈpaʊər əˈsɪstɪd/ adjective  

power-assisted controls controls which require less manual effort to move

power dive  /ˈpaʊər dāv/ noun a steep dive made by an aircraft with its engines at high power to increase the speed

powered  /ˈpaʊərd/ adjective driven by something such as a type of energy or motor system powered by electricity

power line  /ˈpaʊər laɪn/ noun a thick cable, supported by pylons, which carries electricity for long distances.

powerplant  /ˈpaʊərplænt/ noun an engine used to move a vehicle or aircraft. Additional strength is required for the powerplant attachment point.

(Note: The word also written power plant.)

...by replacing the Rotax engine with a four-stroke Jabiru powerplant, the aircraft designers claim the aircraft will be provided with more power and increased all-round performance. [Flight International 16-22 July 1997]

power supply  /ˈpaʊər ˈsəˈplaɪ/ noun an electrical circuit that provides particular direct current voltage and current levels from an alternating current source for use in other electrical circuits. If the power supply from the amplifier to the gauge fails, the needle slowly falls to zero.

practical  /ˈpræktɪkl/ adjective capable of being put into practice or effect. Some military aircraft use braking parachutes but this is not practicable on civil aircraft.

practically referring to practice or action rather than theory. For practical purposes, any straight line drawn on a Lambert’s conformal projection represents a great circle.

practice  /ˈpræktɪs/ noun  

1. habitual or customary behaviour  
It is common practice for pilots to take turns to sleep on long-haul flights.  
2. a performance or operation in practice when actually done, in reality. Frequency modulation (FM) in theory has a limitless number of sidebands, but in practice only the first eight pairs are significant.

verb US same as practise

...if the aircraft has been standing overnight or longer, check the drains for water. This should, of course, be normal practice. [Civil Aviation Authority, General Aviation Safety Sense Leaflet]

practise  /ˈpræktɪs/ verb to do something repeatedly in order to improve  

In order to improve flying skills, a trainee pilot must practise regularly. (Note: This word is also written practice in US English.)

pre-  /pr/ prefix before

pre-arrange  /priː əˈreɪn/ verb to decide or to plan in advance, to predetermine. Selective calling uses the four-letter code pre-arranged with the controlling authorities.

precaution  /ˈprɪkəʃən/ noun an action taken to prevent or avoid a dangerous situation or failure. Personnel concerned with fueling should take every precaution to prevent outbreaks of fire.
precede /prɪˈsɪd/ verb to take place or to come before something else • A period of calm often precedes a storm. • When the RVR (runway visual range) is greater than the maximum value which can be assessed, the group will be preceded by the letter indicator P followed by the highest value which can be assessed.

precedence /ˈprɛsɪdəns/ noun the quality of being more important or urgent than something else • to take precedence over to have priority over, to be more important than • Emergency landings take precedence over all others.

preceding /prɪˈsɪdɪŋ/ adjective taking place or coming before something else • as mentioned in the preceding paragraph as written in the paragraph before the one being read

precipitation /prɪˈsɪpəˈteɪʃ(ə)n/ noun water falling as rain, drizzle, hail, sleet and snow from the atmosphere onto the surface of the Earth • Cloud droplets are small and light at first, but when the droplets grow and become heavier, they fall as precipitation. • Precipitation is classified as light, moderate or heavy according to its rate of fall.

precise /prɪˈsɛs/ adjective exact or accurate • A pinpoint is an indication of the precise position of the aircraft. • A precise interval is essential to obtain correct ignition timing on all cylinders during engine running.

precision /prɪˈsɪʒ(ə)n/ noun exactness or accuracy • Precision flying is only achieved by constant practice. • with precision with exactness

precision approach path indicator /prɪˈsɪʒ(ə)n əˈprɒʊf pɑθ/ noun a set of lights that enables pilots to judge whether their glide slope is correct on the final approach to landing

precision approach radar /prɪˈsɪʒ(ə)n əˈprɒʊf rəˈredə/ noun a ground-based primary radar system to give vertical and lateral information about an aircraft’s final approach path. Abbreviation PAR

precision area navigation /prɪˈsɪʒ(ə)n əˈreɪˌneɪʃ(ə)n/ noun a standard of performance for navigation that requires an aircraft to remain within 1 nautical mile of the centreline of its course for 95% of the time. Abbreviation PRNAV

pre-departure /prɪˈdiːpərt/ adjective taking place before a departure • Only a few passengers absorb the pre-departure safety information.

pre-departure clearance /prɪˈdiːpərt kəˈlɪərəns/ noun a message that the pilot must receive from air traffic control before the plane is allowed to take off

predetermine /prɪˈdɛtəmən/ verb to decide and set or fix beforehand

predetermined /prɪˈdɛtəmund/ adjective decided and set beforehand • When the roll control knob is returned to the central position, the aircraft rolls out on to a predetermined heading.

predict /prɪˈdɪkt/ verb to foretell or to say beforehand • Rain is predicted within the next hour. • Dead reckoning position is the position of the aircraft as predicted by calculation.

predictable /prɪˈdɪktəb(ə)l/ adjective 1. reliably regular and therefore foreseeable • Only the high frequency band has predictable, reliable sky wave propagation by day and by night. 2. capable of being foreseen, expected or anticipated • the accident was predictable it was possible to know that the accident would happen before it happened.

prediction /prɪˈdɪkʃ(ə)n/ noun the act of saying what will happen in the future • The map display combines current ground speed and lateral acceleration into a prediction of the path over the ground to be followed over the next 30, 60 and 90 seconds.

predominance /prɪˈdɒməns/ noun greatest importance or influence • The predominance of a cold northerly airstream during the winter months.

predominant /prɪˈdɒmənt/ adjective most important or influential, more powerful than others • The ocean surface usually consists of a predominant...
swell three or four feet high and 500 to 1,000 feet between crests.

predominate /prɪˈdɒmɪneɪt/ verb to have greater number or importance, or to be more powerful than others o A cold northerly airstream predominates during the winter months.

prefer /prɪˈfɜːr/ verb to like more, to favour o Of the two basic types of fuel pump, where lower pressures are required at the burners, the gear-type pump is preferred because of its light-weight. (NOTE: preferring – preferred).

preferable /prɪˈfɜːrəb(ə)l/ adjective better than, more desirable o Three position lines are preferable to two. o If there is a choice between two courses of action, the safest is the most preferable.

preference /prɪˈfɜːrəns/ noun o in preference to by choice, rather than o For some applications, e.g. landing gear and flaps, hydraulic systems are used in preference to mechanical or electrical systems.

prefix /prɪˈfɪks/ noun part of a word added at the beginning of a word to alter the meaning. (NOTE: The plural form is prefixes.)

COMMENT: The prefixes for cloud types are: alto- medium level cloud (6,500 feet to 23,000 feet); cirro- high cloud (16,500 feet and above); nimbo- any height, but rain-bearing as for example nimbostratus: rain carrying, low-level cloud; strato- low cloud (up to 6,500 feet).

pre-flight /ˌprɪəˈflɪt/ adjective taking place before a flight o pre-flight briefing a short instructional talk before a flight o pre-flight checks checks made on the aircraft structure and systems before taking off o During pre-flight checks, control surfaces should be moved by hand to ascertain that they have full and free movement. o noun the set of procedures and checks that pilots and ground crew must carry out before an aircraft takes off o verb to inspect an aircraft before it takes off to ensure that it is airworthy

pre-ignition /prɪˈɪɡənʃ(ə)n/ noun the ignition of the fuel/air mixture in the combustion chamber, occurring before the spark o Pre-ignition is often caused by a hot spot in the combustion chamber which ignites the mixture.

preparation /ˌprɛəˈreɪʃ(ə)n/ noun a state of readiness or act of making something ready for use beforehand o Normal aircraft preparation are actions and precautions taken by the cabin crew on every flight to ready the aircraft for any abnormal or emergency situation which may occur during any phase of the flight.

prepare /prɪˈpeər/ verb 1. to make ready beforehand for a particular purpose, as for an event or occasion o The instructor prepared the students for the exams. o prepare for take-off to get ready for take-off 2. to make by putting various elements or ingredients together o Regional area forecasting centres use information about upper wind speeds and temperatures to prepare specific forecasts and significant weather charts.

prescribe /prɪˈskraɪb/ verb to set down as a rule or a guide o prescribed procedures a set or fixed pattern of doing something o A means of holding the fine pitch stop in a prescribed position is also called 'pitch lock'.

pre-select /prɪˈsɛlkt/ verb to select or to choose in advance

pre-selected /prɪˈsɛlktəd/ adjective selected or chosen in advance o The CSU (constant speed unit) maintains the pre-selected propeller speed.

presence /prɪˈɛns(ə)n/ noun existence o The presence of cloud by day decreases the value of the maximum temperatures. o A fuel sample hazy or cloudy in appearance would indicate the presence of water.

present /prɪˈzɛnt/ adjective 1. in place, existing o Fuel, oxygen and heat must all be present for fire to exist. 2. the period in time through which we are now living, between the past and the future o at the present time at this time, now o present day aircraft modern aircraft o present weather the weather at the moment of speaking o verb /ˈprɪzənt/ 1. to create or to make o A fire in a toilet could present difficul-
presentation

ities. o Learning to fly presents a challenge. o to present an opportunity to create or to give an opportunity 2. to give a prize or award o Charter passengers on Concorde were presented with a certificate as a souvenir of their flight.

presentation /ˌprɛzəˈnteɪʃən/ noun showing, a display o The most widely acceptable presentation of flight fuel data is in a tabular form.

presently /ˈprɛsəntli/ adverb 1. soon o I’ll be there presently. 2. US now, at the present time o he’s presently in France at the present time, he is in France o a number of methods are presently in use a number of methods are currently in use

preset /ˈprɪsɛt/ verb to set in advance o Radios allow the user to preset a number of different frequencies. (NOTE: presetting – preset) • adjective set in advance

press /ˈpreʃər/ verb to push or exert pressure on o press to test/talk (PTT) button o Press the button.

pressure /ˈpreʃər/ noun force applied uniformly over a surface, measured as force per unit of area o fuel pressure pressure exerted by fuel as it is pumped from the tanks to the engine o pressure switch a switch which is activated when a preset pressure is attained o Some engines a fuel differential pressure switch fitted to the fuel filter senses the pressure difference across the filter element. o absolute pressure

pressure altimeter /ˌprɛʃər ˈæltɪmətər/ noun a conventional altimeter which operates using atmospheric pressure

pressure altitude /ˌprɛʃər ˈæltɪtjuːd/ noun the altitude indicated when the altimeter is set to 1013.2 millibars o When using flight levels, the altimeter should be set to 1013.2 mb to give the pressure altitude.

COMMENT: Pressure altitude is used in determining density altitude, true altitude and true airspeed.

pressure bulkhead /ˌprɛʃər ˈbʌlkhead/ noun a partition inside the aircraft which separates pressurised from non-pressurised areas

pressurise /ˈpreʃərəraɪz, ˈprɛʃəraɪz/ verb to increase the pressure of o When air pressure is used to transfer fuel, it will be necessary to pressurise the fuel tanks.

prevail /prɪˈveɪl/ verb to be most common or frequent o Hot dry conditions prevail in the Middle East in summer time. o the prevailing wind is from the south-west the wind blows from the south west more often than from any other direction.

prevent /prɪˈvent/ verb to stop from happening o Heated air provides sufficient heat in the outer skin to melt ice already formed and prevent any further ice formation.

previous /ˈpriːvərəs/ adjective coming before, earlier o the previous chapter the chapter before the one being read or referred to o previous reports earlier reports

primarily /praɪˈmərɪəl/ adverb most often, mainly o Dry chemical fire extinguishers are primarily used for electrical fires.

primary /ˈprɪməri/ adjective first or most important o of primary importance of greatest importance o primary coil an induction coil

primary flight display noun same as primary flight instruments

primary flight instruments /ˈprɪmərɪ flɪt ˈɪnstrʌmənts/ plural noun the six instruments displayed on the instrument panel immediately in front of the pilot: airspeed indicator, attitude indicator, altimeter, turn coor-
Distributor, heading indicator, and vertical speed indicator • When practising instrument flying, the attitude indicator is the most important of the primary flight instruments.

**primary radar** /prəˈmeɪnərɪ 'reidər/ **noun** a radar system which uses reflected radio signals

**prime** /prəm/ **adjective** first • **prime importance** greatest importance • verb to pump fuel spray into the piston engine inlet manifold to make starting from cold easier • During the summer, after the first flight of the day, it is not normally necessary to prime the engine.

**prime number** /prəm ˈnʌmbər/ **noun** a number, which, if there is to be no remainder, is only divisible by itself and 1, e.g. 13, 17, 19, 23, 29

**primer** /prəmər/ **noun** 1. a protective substance which is applied to a metal or wood surface before painting • Interior metal finishing is done with dust shedding gloss paint over a primer. 2. a small hand-operated pump, operated from the cockpit, to spray fuel into the piston engine inlet manifold to make starting from cold easier.

**principal** /ˈprɪnsɪp(ə)l/ **adjective** main • Four principal control modes can be selected on the EFIS (electronic flight instrument system) control panel.

**principle** /ˈprɪnsɪp(ə)l/ **noun** a basic truth or law • Fire extinguishing is based on the principle of removing one of the three components necessary for fire to exist — fuel, oxygen and heat.

(NOTE: Do not confuse with principal.)

**prior** /ˈpraɪər/ **adjective** earlier, previous • prior approval • prior permission • prior to • prior to take-off • Prior to take-off before take-off

‘...the pilot remembered hearing the stall warning immediately prior to impact’ [Pilot]

**priority** /ˈprɪərɪti/ **noun** the order of importance or urgency • **high priority** important or urgent in the circumstances • **low priority** not important or urgent in the circumstances

**Private Pilot’s Licence** /ˈprɪvət ˈpɪləts ˈlaɪsns/ **noun** the basic licence for flying light aircraft. Abbreviation PPL

**PRNAV** abbreviation precision area navigation

**probability** /prəˈbɪlətɪ/ **noun** likelihood, the chance of occurrence • The probability of aquaplaning increases as the depth of tyre tread decreases.

**probable** /prəˈbæbl/ **adjective** likely, most possible • Pilot error was the probable cause of the accident.

**probe** /prəʊb/ **noun** a metal sensing device • Ice is allowed to accumulate on a probe which projects into the airstream.

**procedural** /prəˈsɪdʒərəl/ **adjective** referring to procedure

**procedural approach** /prəˈsɪdʒərəl əˈprɔʊtʃ/ **noun** a specific approach made often after procedure turns as part of timed, accurately flown flight pattern to prepare for a landing at a particular aerodrome • It is important that the integrity of an aid used to conduct procedural approaches is high.

**procedure** /prəˈsɪdʒə/ **noun** 1. a series of actions taken to achieve something • **an emergency procedure** 2. the process by which aircraft are brought into position for an instrument approach and landing

**procedure turn** /prəˈsɪdʒə tɜːrn/ **noun** a turn made at 3° per second to align the aircraft with the runway

**process** /ˈprəʊses/ **noun** a series of actions or changes which achieve a particular result • adiabatic process • combustion process • cooling process

**produce** /prəˌdjuːs/ **verb** 1. to create • Low altostratus clouds often produce rain. 2. to make or to manufacture • Most light aircraft are produced in the United States. 3. to show • The pilot must produce her licence to the authorities within two weeks.

**product** /ˈprɒdʌkt/ **noun** 1. something created or made by human or natural methods • Carbon monoxide is a product of the combustion process. 2. a number obtained by multiplying two other numbers together • The amount of power produced in a purely resistive
production /prəˈdækʃən/ noun 1. a continuous series or sequence. 2. the process of manufacturing something. 3. Production of an image on a surface.

project noun /ˈprɒdʒekt/ a large-scale plan or scheme. 1. to produce an image on a screen with a film or slide projector. 2. The instructor projected a diagram of the fuel system onto the screen.

profile /ˈprəʊfaʊl/ noun 1. an outline or shape of something, seen from a side view. 2. a short description. 3. A short profile of the different aircraft types.

prognostic /prəʊˈnɒstɪk/ adjective referring to foretelling or foreseeing events such as the weather.

prognostic chart /prəʊˈnɒstɪk ˈʃært/ a chart which predicts the weather for a given area.

programme /ˈprəʊdʒekt/ noun the schedule of events to take place or procedures to be followed. 1. Every part of the aircraft must be designed to carry the load imposed on it and in order to determine such loads a programme of stress analysis is always carried out. (NOTE: The word is also written program in US English.)

progress /ˈprəʊɡres/ noun 1. movement towards an end or aim. 2. the progress of an aircraft in flight. 3. in progress taking place. 4. embarkation is in progress passengers are boarding the aircraft.

progression /ˌprəʊˈɡresɪʃən/ noun a continuous series or sequence. 1. The instruments are checked in logical progression from left to right.

progressive /ˌprəʊˈɡresɪv/ adjective gradual, in stages. 1. Throttle movements should be kept to a minimum and be smooth and progressive.

production 180

circuit is a product of voltage and current (P = VI watts).

prohibit /prəˈhɪbit/ verb to disallow or forbid. 1. Smoking is prohibited in toilets.

pronounced /prəˈnʌnst/ adjective noticeable or marked. 1. Turbulence caused by convection is more pronounced over paved surfaces than over forest or grassy terrain.

propagation /ˌprəʊˌpɑːɡeɪʃən/ noun transmission. 1. The speed of propagation of radio waves is slower over land than sea.

propel /ˈprəʊpəl/ verb to cause to move. 1. Propellers are propelled by the wind behind them.

propeller /ˈprəʊpələr/ noun a rotating shaft with blades which, together with the engine, moves an aircraft through the air.

propeller blade /ˈprəʊpələr bleɪd/ noun one of the elements of a propeller which generate lift when the unit is turning.
propeller pitch /ˈprəʊpələr pɪtʃ/ noun the distance a propeller would advance in one rotation if there was no slip
propeller tip /ˈprəʊpələr tɪp/ noun the part of the blade of a propeller furthest from the central hub
propelling nozzle /ˈprəʊpəlɪŋ nəʊzəl/ noun the extreme rear part of the jet engine where the jet exhaust enters the atmosphere

properly /ˈprɒpərli/ adverb correctly ○ When the chart is properly orientated, it is easier to compare distance between landmarks. ○ The pinpoint is a very positive means of establishing position, as long as the feature is properly identified.

property /ˈprɒpərtri/ noun 1. a characteristic or quality ○ Mass is a basic property of matter. ○ One of the properties of mercury is that it is liquid at room temperature. 2. the things that somebody owns, possessions ○ personal property things belonging to a particular person

prophet /ˈprɒprət/ noun same as turboprop

proportion /ˈprəʊpɔːʃən/ noun 1. part of the whole compared with another part ○ Only a small proportion of passengers absorb the pre-departure safety information. 2. in proportion to directly related to ○ The force required to move the control column is in proportion to the force being exerted by the control surface.

proportional /ˈprəʊpɔːʃəln(ə)l/ adjective 1. comparable 2. related ○ (directly) proportional directly related ○ The wind blows along contours with low values on the left, and the speed is directly proportional to the contour gradient. ○ inversely proportional so that as one thing increases and another decreases by the same amount ○ Temperature is inversely proportional to altitude. ○ The magnitude of the pressure gradient force is inversely proportional to the distance apart from the isobars.

propulsion /ˈprəʊpəlsәn/ noun an act or instance of pushing or driving forwards (NOTE: The verb is to propel.)

propulsive /ˈprəʊpəlsəv/ adjective pushing or driving ○ The propeller is a means of converting engine power into a propulsive force called thrust. (NOTE: The verb is to propel.)

propulsive power /ˈprəʊpəlsəv pərˈwaʊ/ noun the power needed to produce thrust

protect /ˈprəʊtɛkt/ verb to keep from harm, injury or damage ○ Gloves are worn to protect the hands in the event of a fire.

protection /ˈprəʊtɛkʃən/ noun the act of keeping something from harm, injury or damage ○ Bush bars are insulated from the main structure and are normally provided with some form of protective covering.

protrude /ˈprəʊtrud/ verb to extend above a surface ○ Prominent mountains frequently protrude above low-lying cloud and mist.

protrusion /ˈprəʊtrəʒən/ noun something which protrudes or extends above a surface ○ When it has been necessary to physically remove a layer of snow, all protrusions and vents should be examined for signs of damage.

prove /pruːv/ verb 1. to show that something is true ○ The pilot proved that she was not at fault. 2. to be found to be, to be discovered to be (NOTE: proving – proved – has proved ○ to prove useful to be discovered as useful by experience ○ dry chemical extinguishers are used primarily for electrical fires and have also proved effective on liquid fires it was discovered that, although these extinguishers were designed for electrical fires, they were good at putting out liquid fires such as petrol fires.

provide /prəˈvɔːd/ verb to supply or to give ○ Radio altimeters provide a continuous indication of height above the surface immediately below the aircraft up to a maximum of 5,000 feet. ○ Flight crews are frequently provided...
provision /prəˈvɪʒ(ə)n/ noun 1. providing something, or what is provided
2. The provision of fresh air is important for passengers’ comfort. Catering companies are responsible for the provision of food. There is a generator for the provision of emergency power. The oil tank has provision for filling and draining.

psychological stress /ˌsaɪkəlɒdʒɪk(ə)l/ˈstres/ noun a mentally or emotionally upsetting condition which affects one’s health.

PTT abbreviation press to talk

public /ˈpʌblɪk/ noun people in general an adjective referring to the people in general

public address system /ˌpʌblɪk əˈdres, ɪˈsɪstəm/ noun a microphone, amplifier and loudspeaker set up to allow one person to be heard by a group of people. The captain made a public address (PA) system announcement asking passengers to remain seated. Abbreviation PA system

publication /ˈpʌblɪkjuˈkeɪʃ(ə)n/ noun 1. the act of making something public. Publishing is the publication of the latest figures. 2. a book, magazine, chart, etc., which has been published. The book is a Civil Aviation Authority publication.

public relations /ˈpʌblɪk rɪˈleɪʃ(ə)nz/ noun the task of maintaining good relations with the public. Public relations may also involve putting across a point of view or publicising a product. The arrangements for the VIPs are being handled by the public relations department. Abbreviation PR

publish /ˈpʌblɪʃ/ verb to prepare and issue a book, magazine, chart, etc., and sell or distribute it to the public. All known air navigation obstructions in the UK are published in the Air Pilot.

pull out /pʊlt ˈaʊt/ verb to stop a dive in an aircraft and return to level flight

pullout /ˈpʊlaʊt/ noun a manoeuvre in which an aircraft changes from a dive to level flight

pulse /pʌls/ noun a single vibration of electric current

pulse modulation /ˈpʌls ˌmɒdjʊleɪʃ(ə)n/ noun the use of a series of short pulses, which are modified by an input signal, to carry information

pump /pʌmp/ noun a device with rotary or reciprocating action which is used to move fluids along pipes or for compressing fluids. A verb to move or compress a fluid by means of a pump. Fuel is pumped from the tanks to the carburetor.

COMMENT: Most modern aircraft are fitted with hydraulic pumps driven from the engine. Other types of pumps may be found, but these are usually used to power emergency systems. Pumps can be driven directly from the engine gearbox, by an electric motor, or by air.

pure /pjʊə/ adjective not mixed with something else. Inner tubes for tyres are made of pure rubber. Magnesium does not possess sufficient strength in its pure state for structural uses.

pure aluminium aluminium which has not been combined with any other metal to create an aluminium alloy

purple airway /ˈpɜːpəl əˈweɪ/ noun an area of temporarily controlled airspace, established to provide special protection to Royal flights in fixed-wing aircraft, in which additional rules for air traffic apply at all times and in all weathers

purpose /ˈpɜːpəs/ noun 1. function. The purpose of the engine is to convert heat energy to mechanical energy. 2. a use. For practical purposes, any straight line drawn on a Lambert’s chart represents a great circle.
eral purpose for all-round or general use
push-back /'puf bæk/ noun the process of pushing a plane out from its parked position using a special vehicle
pushrod /'pufrəd/ noun a steel or aluminium rod which moves the rocker arm. (NOTE: The camshaft operates the pushrod. (NOTE: The pushrod is part of the valve mechanism.)
pylon /'paɪlən/ noun 1. a structure on the wing of an aircraft to support an engine (NOTE: Most modern jet passenger transport aircraft have pylon-mounted engines.) 2. a tall metal structure built to support electricity or telephone cables. (NOTE: Electricity pylons are difficult to see from the air so pilots of light aircraft should be particularly careful to note their positions.
pyrotechnic /ˌpərəˈteknɪk/ adjective of or relating to fireworks. pyrotechnic lights lights created by rockets or flares
Q-code /ˈkjuː kəʊd/ noun  an international telegraph code which is now used in RTF operations
QDM noun  in the Q-code system, the magnetic bearing to a direction-finding station
QFE noun  in the Q-code system, the atmospheric pressure at aerodrome level
QFI abbreviation qualified flying instructor
QNE noun  in the Q-code system, the altimeter setting for flight level reading, 1013.25 mb
QNH noun  in the Q-code system, the atmospheric pressure at mean sea level
QNH datum /ˈkjuː en ˈetf ˌdestəm/ noun  the barometric level from which altitude is measured
QTE noun  in the Q-code system, the true bearing from a direction-finding station
quadrant /ˈkwɔrdənt/ noun  1. a device shaped like a quarter of a circle a gated quadrant a quadrant with a device preventing a lever from being moved to an incorrect setting o The throttles, usually known as power levers, operate in a gated quadrant. 2. a compass quadrant the quarter part of a circle centred on a navigational aid

COMMENT: NE quadrant = 000° – 089°; SE quadrant = 090° – 179°; SW quadrant = 180° – 269°; NW quadrant = 270° – 359°.
quadrantal /ˈkwɔrdəntəl/ adjective referring to a quadrant or to a quarter of a circle o quadrantal error a radio signal error caused by the metal structure of the receiving aircraft o quadrantal height flight levels in each of the compass quadrants designed to provide safe separation for aircraft heading towards each other
qualified /ˈkwɔlɪfɪd/ adjective having gained a certificate after having completed a specialised course of study qualified flying instructor /ˈkwɔlɪfɪd ˈflaɪɪŋ ɪnstrʊktər/ noun a pilot with an instructor’s rating. Abbreviation QFI
qualify /ˈkwɔlɪfɪ/ verb 1. to add reservations or modify an earlier statement to make it less absolute o Fire in the wing may cause the captain to qualify the evacuation command, informing cabin crew of these conditions and allowing them to adjust the evacuation plan accordingly. 2. to study for and obtain a diploma which allows to do a particular type of work o He qualified as an engineer in 1996.
quality /ˈkwɔlɪtɪ/ noun the amount of excellence of something o Satisfactory ignition depends on the quality of the fuel.
quantity /ˈkwɒntɪtɪ/ noun the size, extent, weight, amount or number of something o A small quantity of illegal drug was found in the passenger’s bag.
quarter /ˈkwɔrtər/ noun one fourth of something o The fuel tank is only a quarter full.
QUJ noun  in the Q-code system, the true track to reach a destination
radar /rɪˈdɑːr/ noun a method of detecting distant objects and establishing their position, velocity, or other characteristics by analysis of very high frequency radio waves reflected from their surfaces

radar advisory service /ˌrɪdər ˈædˌvɛrəsərɪ ˈsɜːvɪs/ noun an air traffic radar service which gives pilots advice on actions necessary to ensure that they remain at a standard distance from other aircraft that are also receiving the service. Abbreviation RAS

radar beam /rɪˈdɑːr ˈbiːm/ noun a shaft of radar waves directed towards a distant point

radar information service /ˌrɪdər ɪnˈfərəmʃən ˈsɜːvɪs/ an air traffic radar service which gives pilots details of the positions, distances and levels of other aircraft to enable them to decide on any avoiding action which may be appropriate. Abbreviation RIS (NOTE: An RIS is often provided when it is not possible or practical to provide an RAS.)

radar screen /rɪˈdɑːr ˈskrɪn/ noun a cathode ray tube screen on which radar information is displayed

radar vectoring /ˌrɪdər ˈvɛktərɪŋ/ noun the provision of navigational guidance to aircraft in the form of specific headings, based on the use of radar

radial /rɪˈdiəl/ adjective referring to lines of radius having a common centre

radial engine engine in which the pistons are arranged like the spokes of a wheel

radar /rɪˈdɑːr/ noun a line of radio bearing from a VOR beacon

To get to a facility you must track the reciprocal of the VOR radial.

radiate /rɪˈdeɪt/ verb to send out rays or waves ○ The Earth radiates low intensity infrared waves. ○ Short bursts of energy are radiated from an antenna.

radiation /rɪˈdɑːʃən/ noun the act or process of sending out rays or waves ○ terrestrial radiation radiation from the Earth

radiation fog /ˌrɪdərɪˈeɪʃən ˈfɒɡ/ noun fog caused by the cooling of the Earth to below the dew point, combined with saturation and condensation and a light mixing wind ○ Radiation fog cannot form over the sea.

radiator /rɪˈdeɪtər/ noun a liquid-to-air heat exchanger that transfers engine heat to the outside air ○ Anti-icing additives are used in radiator coolants.

coolant

radio /rɪˈdiəʊ/ noun wireless transmission through space of electromagnetic waves in the approximate frequency range from 10 kHz to 300,000 MHz ○ radio waves electromagnetic radiation waves ○ The atmosphere absorbs radio waves.

radio aid /rɪˈdiəʊ əd/ noun a navigation aid utilising radio waves

radio altimeter /rɪˈdiəʊ ˈæltɪmətər/ noun a device for measuring the height of the aircraft above the Earth using reflected radio waves

radio horizon /rɪˈdiəʊ ˈhɔːˌrɔnɪzn/ noun a line along which direct rays from a radio frequency transmitter become tangential to the Earth’s surface

radio magnetic indicator /ˌrɪdɪˌmæɡ.nɪˈtɪdər/ noun
radiotelephony 186

a cockpit navigation instrument which combines a bearing indicator and a heading indicator and can be used with ADF or VOR. Abbreviation RMI

radiotelephony /ˈrɛdiətəˌlɛfəni/ noun the transmission of speech by radio. Correct use of R/T phraseology avoids ambiguity. Abbreviation R/T

radius /ˈreɪdiəs/ noun the radius of a circle a line drawn from a point on the circumference of a circle to the centre point. (Note: The plural form is radii. /ˈreɪdi/)

radome /ˈreɪdəʊm/ noun a dome that protects a radar antenna, made from materials that do not interfere with the transmission and reception of radio waves

RAF abbreviation Royal Air Force

raft /ræft/ noun a flat-bottomed inflatable rubber craft for floating on water

railway line /ˈreɪliweɪ/ noun a railway track or train track. A railway line is a useful landmark.

rain /reɪn/ noun precipitation or water which falls from clouds in small drops. Rain is falling heavily. Rain and weather present fewer problems for area radar compared to the other types. Verb to fall as drops of water from clouds. It is raining. I don’t think it will rain.

rainstorm /ˈreɪnstoʊm/ noun heavy rain accompanied by wind. In heavy rainstorm, the windshield wipers may not be able to cope.

raise /rɛz/ verb 1. to lift. Raise the landing gear retract the undercarriage. 2. to increase. Raise the temperature. To raise the pressure. To cause problems. Fuel vaporisation can raise problems when starting the engine. (Note: Do not confuse with the verb to rise. Grammatically, the verb raise takes an object whereas the verb rise does not: temperature rises; The sun’s rays raise the temperature of the surface.)

rake /ræk/ noun the angle between a wing or propeller blade of an aircraft and a perpendicular or line of symmetry

ram /ræm/ noun an increase in air pressure caused by the forward speed of the aircraft. Due to ram effect from aircraft forward speed, extra air is taken into the engine.

ram air /ˈrɛm ər/ noun airflow created by the movement of the aircraft which is used to cool, ventilate or drive turbines. Oil cooling is often achieved by using ram air or fuel.

ramjet /ˈrɛmɪdʒ/ noun a type of jet engine in which fuel is burned in a duct with air compressed by the forward motion of the aircraft

ramp /ræmp/ noun 1. an inclined track for loading and unloading. The height of the cabin floor to the ground on large jet transports means that injuries can occur by exiting through the doors when steps or ramps are not available. 2. US same as apron

range /rɛndʒ/ noun 1. the amount or extent of variation. Range of frequencies. Range of temperatures. 2. a row or chain of mountains or hills. The Rocky Mountain range. Valley winds require at least a reasonable pressure gradient, preferably along a range of hills which will produce a wind at right angles to the hills. 3. the maximum distance an aircraft can fly on a given amount of fuel. Cruise level is selected to give the greatest fuel economy, i.e. the greatest range for least fuel.

raiser /rɛsər/ noun 1. the maximum effective distance of operation. Precision approach radar (PAR) is subject to weather interference and has a limited range. Verb to range from to.

rain 1. Precipitation or water. 2. Weather interference. 3. Fuel economy.

rapid /ˈræpɪd/ adjective fast, with great speed. Hoar frost is a light crystalline deposit which can form on the aircraft as a result of rapid descent from cold altitudes into warm moist air.

rapidly /ˈræpɪdlɪ/ adverb with great speed, quickly.

rapid changes fast changes

spontaneous combustion occurs with such rapidity that there is an audible explosion.

spontaneous /ˈspɒntənɪəs/ adjective happening without cause or by itself.

spontaneously /ˈspɒntənɪəslі/ adverb without cause or by itself.

spontaneity /ˈspɒntəˌnɪti/ noun the quality of being spontaneous.
rare /riːər/ adjective uncommon, not often occurring ○ Smog or smoke fog is now rare because of pollution controls.
RAS abbreviation 1. radar advisory service 2. rectified air speed
rate /reɪt/ noun a quantity measured in relation to another measured quantity ○ rate of climb speed of ascent measured in feet per minute ○ rate of descent speed of descent measured in feet per minute ○ flow rate the amount of movement of a fluid through a system in a given time, e.g. gallons per minute
rather /ˈrɑːðər/ adverb 1. to some extent, somewhat ○ rather cold weather weather which is quite cold, but not very cold 2. ○ rather than instead of, preferably ○ Air tends to flow around hills rather than rise over them.
rating /ˈretɪŋ/ noun 1. an authorisation on a licence, and forming part of the licence, giving special conditions or privileges 2. a classification according to a scale
ratio /ˈrɪtʃiər/ noun a relationship between two quantities expressed as the quotient of one divided by the other ○ The air/fuel ratio is 15:1. ○ Chart scale is the ratio of the chart distance to Earth distance. (NOTE: The ratio of 7 to 4 is written 7/4 or 7/4.)
ray /reɪ/ noun a thin or narrow beam of light or other radiant energy ○ cathode ray ○ The Earth is heated by the rays of the sun. ○ X-ray
RBI abbreviation relative bearing indicator
RCC abbreviation rescue co-ordination centre
RCL abbreviation runway centreline
re- /ˈreɪ-/ prefix again ○ reassemble ○ rewrite (NOTE: Not all verbs beginning with re- have the meaning 'again', e.g. remember.)
reach /rɛtʃ/ verb 1. to arrive at a place ○ The aircraft reached its destination on time. 2. to get to a particular level ○ Upcurrents in thunderstorms can reach 3,000 feet per minute. ○ Temperatures can reach 49°C (Celsius) in summertime in the Gulf region. 3. to extend ○ The tops of thunderstorm clouds can reach through the tropopause.
react /riːkɛkt/ verb 1. to act in response to an action ○ Because the rotors and stators of a compressor are of aerofoil shape, the airflow reacts in a similar way to the airflow over a wing. 2. to do or to say something in response to words or to an event ○ The cabin crew reacted swiftly when the fire broke out. 3. ○ to react with something to change chemical composition because of another substance ○ The electrolyte in the cells of a lead-acid battery reacts chemically with the plates.
reactance /riːkɛktəns/ noun a component of impedance in an alternating current circuit ○ Reactance is a form of resistance which varies as the frequency changes.
reaction /riːkʃən/ noun a response to an action or stimulus ○ For every action there is an equal and opposite reaction. ○ Passenger reaction may be slower than usual in an emergency situation. ○ Quick reactions are needed in an emergency.
reaction thrust principle /riˌækʃən ˈθrɛst prɪˈspləs/ the process by which exhaust gases coming off the back of an object cause a reaction force to act on the object and push it forwards
readback /ˈrɛdbaːk/ noun the action of repeating an ATC message to the controller to enable him or her to check that it was correctly received
readily /ˈreɪdli/ adverb 1. promptly, immediately ○ Fire extinguishers must be readily available for use. ○ Ice melts very readily at 0°C (Celsius). 2. ○ it can readily be seen it can be easily understood ○ It can readily be seen from the preceding paragraph that density and pressure are linked.
reading /ˈriːdɪŋ/ noun 1. information indicated by an instrument or gauge ○ altimeter reading the altitude indicated by the altimeter ○ barometer reading the barometric pressure indicated by the barometer 2. ○ map reading the act of interpreting information on a map
readout /ˈrɪdɔːt/ noun a display or presentation of data from calculations or storage. The rotating beam cloud base recorder/indicator operates continuously, day and night and produces an automatic readout of cloud base height.

rear /riə/ noun the aft part, the part furthest from the front. The rear part of the aircraft is called the aft section.

rearward /riəˈwɔːd/ adjective towards the aft or the rear. The expanding gas travels in a rearward direction.

reason /riˈzɔn/ noun the basis or motive for an action. A rough surface is more susceptible to fatigue cracking than a smooth one and for this reason highly stressed members are often polished.

reasonable /ˈrɪzənəbl/ adjective 1. acceptable or fair. A reasonable sum of money is a sum of money which is not too high or which is acceptable 2. within the boundaries of common sense.

Hydraulic fluids are coloured for recognition purposes.

receive /riˈsiːv/ verb to get, to obtain. The sides of the hills and mountains which face the sun receive more intense radiation than flat surfaces because of the angle of exposure to the sun.

receiver /riˈsiːvər/ noun a device that receives incoming radio signals and converts them to sound or light. The transponder in the aircraft consists of a transmitter and a receiver.

recent /ˈrɛnsnt/ adjective referring to a time immediately before the present. A more recent development is the barograph which utilises the electrical output of the digital display barometer. Recent weather significant weather observed in the period since the previous observation, but not now

reception /riˈsepkʃn/ noun an act or instance of receiving radio signals.

The antenna is highly directive in transmission and reception.

reciprocal /rɪˈspɜːrkəl/ adjective reciprocal heading an opposite heading. 180° from a given heading. The reciprocal heading of 090° is 270°.

nautical reciprocal the exactly opposite direction.

reciprocating /rɪˈspɜːkətɪŋ/ adjective moving backwards and forwards or up and down.

recognise /rɪˈɡnəs/ verb to identify, or to know to be something that has been seen, heard, etc. before. It may be difficult to recognise a particular stretch of coastline simply by its appearance.

recognition /rɪˈɡnɪʃn/ noun the process of seeing or hearing something or somebody and knowing what it is or who he or she is. Hydraulics are coloured for recognition purposes.

recommend /rɪˈkəmend/ verb to say that something is worthy, desirable or suitable. Dry chemical extinguishers are recommended for use on aircraft brake fires. Aircraft should be operated to the manufacturers recommended limits.

record /rɪˈkɔrd/ 1. a written account of facts and information for future reference. A set of electronically stored data. 2. to write down something such as information or data. Measure track angles and distances and record them in a log. To capture and store electronically. Details of wind speed, direction, visibility and cloud cover are recorded onto a cassette.

recorder /rɪˈkɔrder/ noun a device for capturing sound onto cassette or magnetic tape. A device for capturing sound onto cassette or magnetic tape. Recorder.

recording /rɪˈkɔrddɪŋ/ noun the act of writing or of picking up and storing information. An anemograph is an instrument which maintains a continuous recording of wind direction and speed on a graph.

recover /rɪˈkʌvər/ verb 1. to return to an earlier, normal condition or attitude. 2. to return from a stall.

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craft to straight and level flight 2. to rescue and remove from a particular area, often the sea. Emergency services recovered two bodies from the wreckage of the helicopter.

recovery /rɪˈkæv(ə)ri/ noun 1. a return to an earlier, normal condition or attitude. Recovery from unusual attitudes a flight exercise requiring the student pilot to return the aircraft to its previous, normal, that is, straight and level attitude, after it has been in an unusual attitude. 2. rescue and removal from a particular area. The recovery of survivors from the sea was carried out by helicopters.

rectangular /rɛktˈæŋɡjəl/ adjective referring to something with the shape of a rectangle. a rectangular wing panel.

rectification /rɛktɪˈʃɛfɪk(ə)n/ noun the process of changing an alternating current into direct current. Part of the generator alternating current (AC) is passed through a rectification circuit.

rectified airspeed /rɛktɪˈfeɪts̩/ noun indicated airspeed corrected for instrument error and pressure error. When rectified airspeed (RAS) is corrected for density error the resultant is known as the true airspeed.

rectifier /rɛktɪˈfɪər/ noun an electronic circuit that converts an alternating current supply into a direct current supply. The ignition unit receives an alternating current which is passed through a transformer and rectifier.

rectify /rɛktɪfai/ verb 1. to change alternating current into direct current. Alternating current output is rectified and regulated externally and returned as direct current to the stator field winding. 2. to correct a mistake to put right a mistake

Redeye /ˈredəi/ noun a late night or overnight airline service.

reduce /rɪˈdʒʊd/ verb to decrease. Opposite increase. Reduce altitude to descend. Reduce temperature to make cooler.

reduced separation /rɪˈdʒʊstɪˈpɛrəʃ(ə)n/ noun a revised minimum separation which is smaller than the previous minimum separation.

redundancy /rɪˈdʌndənsi/ noun the duplication of component parts of a system to enable the system to function even if one component fails. With system redundancy, a single failure within a system will have little effect on the aircraft’s performance during the approach and landing operation.

redundant /rɪˈdʌndənt/ adjective referring to a system which provides extra component parts to enable the system to function even if one component fails. Redundant structure design is composed of a large number of members, all of which share a load, so that if one of the members is lost, the load carried by the member is divided between all the others in such a way that the total load-carrying ability is reduced only slightly.

redo /rɪˈdɔ/ verb 1. to correct a mistake. 2. to describe or give a name to. The term wind is used to refer to the horizontal motion of air.

re-enter /rɪˈɛntər/ verb to enter again. For engine checks the aircraft should be headed into wind to prevent hot exhaust gases re-entering the engine.

refer /rɪˈfər/ verb 1. to describe or give a name to. The term wind is used to refer to the horizontal motion of air. 2. to direct someone to a source of help or information. (NOTE: referring – referred) refer to chapter 10 for more details. Look at or read chapter 10 for more information.
reference /ˈref(ə)rəns/ noun something used as a basis for further calculation or investigation. • visual reference anything seen and used as a guide to something else. • use the large building as a visual reference for the turn onto final approach. • reference book a book in which you can look for information, e.g. a dictionary. • by reference to by looking at and comparing reference datum /ˈref(ə)rəns,ˌdɛtəm/ noun a line fixed by the designer from which measurements are made when checking or adjusting wing angles, etc.

reference point /ˈref(ə)rəns,ˌpɔɪnt/ noun a fixed datum near the centre of the airfield landing area.

reference signal /ˈref(ə)rəns,ˌsɪɡnəl/ noun a signal against which telemetry data signals are compared.

refinement /rɪˈfɪnmənt/ noun an improvement. • an internal locking device is one of the numerous refinements to the simple actuator.

reflect /rɪˈflekt/ verb to throw back something such as radio waves or light. • Snow surfaces reflect up to 90% of radiation while rock, sand and concrete reflect only 10–20%.

reflection /rɪˈflektʃən/ noun the process of throwing back of something such as radio waves or light. • Glare caused by reflection of sunlight from the top of a layer of fog or haze can seriously reduce the air-to-ground visibility.

reflective /rɪˈflektɪv/ adjective able to throw back something such as radio waves or light. • Reflective power means that at low angles of elevation of the sun, water reflects a great amount of solar radiation thus slowing down the rise in sea surface temperatures.

reflector /rɪˈflektər/ noun a device which throws back something such as light. • The shape of a water droplet makes it a good reflector, so water in the atmosphere absorbs and scatters radio waves.

refract /rɪˈfrækt/ verb to cause a wave, such as light or sound, to change direction or turn as it passes from one medium into another of different density. • A sky wave starts life as a direct wave and, on reaching the ionosphere, the direct wave is refracted and returns to the Earth’s surface.

refraction /rɪˈfrækʃən/ noun the change in direction or turning of a wave, such as light or sound, as it passes from one medium into another of different density.

refrigerant /rɪˈfrɪdʒərənt/ noun a substance to provide cooling either as the working substance of a refrigerator or by direct absorption of heat. • Heated air from the main air supply system passes through the evaporator matrix and by induction releases heat into the liquid refrigerant.

refuel /rɪˈfjuːl, ˌre-fjuːl/ verb to fill with fuel again. • Fire risk is always present when you defuel and refuel.

regain /rɪˈgɛn/ verb to obtain again or to acquire again. • The omni-bearing selector/course deviation indicator is a demand instrument which indicates which way to turn to regain the required bearing.

regard /rɪˈgɑrd/ noun a particular point or aspect. • in this regard concerning this or with reference to this. • with regard to concerning or with reference to. • With regard to the turbo-propeller engine, changes in propeller speed and pitch have to be taken into account.

regardless /rɪˈɡɑrdəls/ preposition in spite of, despite, with no thought of. • with fly-by-wire technology, the aircraft’s stalling angle of attack cannot be exceeded regardless of control stick input. • The stalling angle of attack cannot be exceeded, despite or no matter what the pilot does with the flying controls.

region /rɪˈdʒiən/ noun 1. an area, usually a large geographical area. • The troposphere is deepest in equatorial regions and shallowest near the poles. 2. in the region of about or approximately. • The burning temperature of...
the fuel is in the region of 2,000°C (Celsius).

**register** /ˈredʒɪstra/ noun an official list or record ◆ The student’s name was not on the register. **verb** 1. to record or to indicate on an instrument ◆ During ground running checks, if oil pressure does not register within a few seconds, the engine should be stopped and the cause investigated. ◆ Electrically operated pressure gauges register main and emergency system pressure. 2. to enter details on an official list ◆ to register an aircraft

**registration** /ˌredʒɪˈstreɪʃən/ noun the entry of civil aircraft into records of national certification authority with details of letter and number code displayed on aircraft ◆ certificate of registration a document issued as proof of registration

**regular** /ˈreɡjələr/ adjective 1. occurring at fixed time intervals ◆ a regular flight ◆ regular inspections inspections taking place at equal intervals of time 2. ordinary or standard ◆ part of the regular menu

**regulate** /ˈreɡjəleɪt/ verb to control, to adjust to a specific requirement ◆ Controllable cowl flaps regulate the amount of air flowing across the cylinders.

**regulation** /ˌreɡjuˈleɪʃən/ noun an act or instance of controlling or adjusting the required amount ◆ Regulation of cabin temperature is controlled by the manual setting of a mechanically controlled switch.

**regulations** /ˌreɡjuˈleɪʃənz/ plural noun rules or laws

**regulator** /ˌreɡjʊˈleɪtər/ noun a device used to control the flow of fluids or electric current ◆ voltage regulator a device to control the level of voltage

**Reid vapour pressure test** /ˈreɪd ˈvæpər ˈprɛʃər ˈtest/ noun a test to determine the pressure required above a liquid to hold the vapours in the liquid at a given temperature

**reinforce** /ˌrɪnˈfɔrs/ verb to make stronger or to strengthen ◆ Typical skin materials used in aircraft are made from epoxy resins which are reinforced with glass, carbon or Kevlar fibres.

**reinforced** /ˌrɪnˈfɔrsd/ adjective made stronger or strengthened

**reinforced plastics** /ˌrɪnˈfɔrsd ˈplæstɪks/ plural noun plastic materials used with glass fibres to repair some types of aircraft structure

**reinforcement** /ˌrɪnˈfɔrsmɑnt/ noun the act of strengthening, or a material or structure used to strengthen something ◆ There is reinforcement around each opening in the pressure cabin, such as the cabin door, escape hatch and windows.

**relate** /rɪˈleɪt/ verb 1. to make a connection or link, to associate ◆ Orientating the chart relates the direction of land features to their representation on the chart and aids recognition. 2. to relate to to concern or to be about ◆ Kepler derived the laws which relate to the motion of planets in their orbits.

**relation** /rɪˈleɪʃən/ noun 1. a natural or logical association between things ◆ the relation between thrust and drag ◆ this bears no relation to that ◆ this is not connected with that in any way 2. a in relation to with reference to ◆ The range at which objects can be recognised is affected by the direction of viewing in relation to the position of the sun or the moon. ◆ The VOR station on the ground does the calculation and, depending on where the aircraft is in relation to the VOR station, it will receive signals which define the bearing of the aircraft from the VOR.

**relationship** /rɪˈleɪʃənʃɪp/ noun a natural or logical association between things ◆ There is a close relationship between altitude and pressure.

**relative** /rɪˈlatɪv/ adjective a relative to compared to, with reference to ◆ Ground-speed is the speed of the aircraft relative to the ground.

**relative airflow** /rɪˈlatɪv ˈɛəflɔʊ/ noun airflow over an aeroflolk, often related to the chord line of the aeroflolk. Also called relative wind

**relative bearing** /rɪˈlatɪv ˈbearɪŋ/ noun the bearing of a radio station or
relative density
noun with reference to the aircraft’s heading
relative density /ˈrelətiv ˈdɛnsəti/ noun the ratio of density of a liquid with reference to water, or of a gas with reference to air
relative humidity /ˈrelətiv ˈhjuːməti/ noun the ratio between the amount of water vapour in the air and the amount which would be present if the air was saturated, at the same temperature and the same pressure
relative wind /ˈrelətiv ˈwɪnd/ noun same as relative airflow
relay /ˈrɛli/ noun a device which responds to a small current or voltage change by activating switches or other devices in an electric circuit. • Thermocouple detectors operate a sensitive relay or electronic circuit when a predetermined temperature is exceeded. • verb to pass an ATC message to an aircraft via another aircraft that is on the same frequency and within radio range (note: Messages may have to be relayed when atmospheric conditions make a direct transmission impossible)
release /rɪˈlɪs/ noun the act of freeing something from something that holds it • Air rising and cooling often reaches its dew point temperature, becomes saturated and any further cooling results in condensation and the consequent release of latent heat. • verb to free from something that holds it • Push the button to release the lever. • Release the brakes let the brakes off • to release the pressure to allow pressure to reduce
relevant /ˈreləvənt/ adjective having a connection with the matter in hand • High charts show only information relevant to high altitude flights and many beacons and aids which are provided for low operations are omitted to keep the chart clear. • relevant information useful information which is related to the matter in question
reliability /ˈreləbəlɪtɪ/ noun dependability, trustworthiness • The gas turbine is a very simple engine with few moving parts, giving it high reliability with less maintenance.
... where a State introduces drug testing, high standards of medical reliability must be maintained' [INTER PILOT]
reliable /ˈrɛliəbl/ adjective dependable, trustworthy • The gas turbine is a very simple and reliable engine.
relief /rɪˈliːf/ noun 1. variations in elevation of the surface of the earth. • Relief is usually represented on aeronautical charts by contours, gradient tints or hill shading, 2. a lessening of pressure
relief valve /rɪˈliːf vɛlv/ noun a valve which opens at maximum safe pressure and closes again upon return to normal operating conditions
relieve /rɪˈliːv/ verb to cause a lessening in, or to remove, excess pressure or tension • Safety valves relieve excess cabin pressure. • A trim tab on the elevator relieves the forward and aft forces on the control stick or yoke.
relight /rɪˈlait/ verb to ignite again • The ability of the engine to relight will vary according to the altitude and the forward speed of the aircraft.
rely /rɪˈlaɪ/ verb to be dependent on • Pressure carburetors do not rely on venturi suction to discharge fuel into the airstream.
remain /rɪˈmɛn/ verb to stay, to continue to be • During the evacuation, crew must remain at their assigned stations and redirect passengers. • The fuel/air ratio does not remain constant, but, as the speed increases, the mixture gets richer. • The audible fire warnings may be cancelled but the red warning light will remain on.
remained /rɪˈmɛnd/ noun 1. something left after excluding other parts, the rest • The auxiliary power unit is usually found in the tail section, separated from the remainder of the fuselage by a firewall. 2. the number left over when one number is divided by another
remote /rɪˈməut/ adjective 1. far away, and not near anything else • a remote area. When the destination is a remote island, the calculation of the point of no return (PNR) becomes
but unlikely possibility

removal /rɪˈmjuːv(ə)/ noun the act of taking something away, or of moving something from the position it occupies
- The repair to the aircraft required the removal of the engine.

remove /rɪˈmjuːv/ verb to take something away or move it from the position it occupies - Filters are fitted in lines in a hydraulic system, in order to remove foreign particles from the fluid. - The engine will have to be removed for removal of the engine.

render /rɪˈendər/, /rɪˈend/ verb 1. to cause to become - The failure of any component in the fire detection system will render the system inoperative. - Tropical air moving northwards is subjected to surface cooling and rendered increasingly stable in its lower layers. 2. to give or to provide help - Only when all possible assistance has been rendered inside the cabin will crew themselves evacuate.

repair /rɪˈpeər/ noun an action designed to return something to good condition after damage - The repair to the nosewheel took three hours. - After the wheels-up landing, the flaps had to be repaired.

Mr Pike elected to wait for repairs instead of taking up the offer of alternative flights, and found himself the only passenger aboard the Jumbo as it flew back to Heathrow four hours late.

repeat /rɪˈpiːt/ verb 1. to do again - The first officer repeated the transmission. - The trainee had to repeat her navigation examination. 2. to occur again - Metal fatigue is induced by repeated stress cycling. 3. to say again - Could you repeat that please? I didn’t hear. - The message was repeated a few minutes later.

repel /rɪˈpel/ verb to push away by a force - Like poles (i.e. north and north, or south and south) of a magnet repel each other. (NOTE: repelling – repelled)

repellent /rɪˈpelənt/ noun a substance used to resist the effect of something - Rain repellent is sprayed onto the windscreen and spread by the wipers.

replace /rɪˈpleɪs/ verb to take the place of or to fill the place of - As warm air rises, cold air moves in to replace it. - The term Greenwich Mean Time (GMT) is being replaced by the term Coordinated Universal Time (UTC).

replacement /rɪˈpleɪsmənt/ noun 1. the act of replacing something with something else - The replacement of moist air by dry air is the only sure way of dispersing advection fog. 2. something or somebody that replaces something or somebody else - She was hired as a replacement for a manager who had recently retired.

reply /rɪˈplaɪ/ noun an answer or response - Secondary surveillance interrogation is made on 1030 MHz (megahertz) and the reply on 1090 MHz (megahertz). - verb to answer, to respond - He replied to the letter. (NOTE: replying – replied)

report /rɪˈpɔːr/ noun an official account of an occurrence - Incident report - Weather report - verb to write or tell information in an official manner - The observer measures this distance in a number of directions and reports the minimum value as the meteorological visibility. - An accident must be reported.

reporting point /rɪˈpɔːrɪŋ pɔɪnt/ noun a specified geographical location on an aircraft’s route at which the crew must report to air traffic control

represent /rɪˈreprɛzent/ verb to indicate or to show, using signs or symbols - On a Mercator projection, meridians are represented as parallel straight lines.

representation /rɪˈreprɛzɛntəʃ(ə)n/ noun a way of showing something, using signs or symbols - The synoptic chart provides a representation of the weather over a large area at a particular time.
representative

representative /ˌreprɪˈzentətɪv/ adjective a representative of which is a typical example of what all others are like. Surface air temperatures are taken in such a way as to be representative of the air temperature near the surface yet unaffected by the direct surface heating or cooling effects. A representative person who acts or speaks for another person or for an organisation such as a company.

request /rɪˈkwɛst/ noun a polite demand, or what is asked for. The pilot for departure clearance when asked for. A personal flying log book must be retained for production on request by an authorised person. The pilot requested vectors to enable him to locate the airfield.

require /rɪˈkwɛr/ verb 1. to need. Dynamic seals require lubrication to remain effective. 2. to impose an obligation, to compel by law. Transport operations over water require the carriage of life rafts, life jackets, survival beacons and pyrotechnics.

requirement /rɪˈkwɛrənt/ noun 1. what is necessary. Planning for an in-flight emergency is a standard requirement of pre-departure preparation. 2. a legal requirement an obligation by law. something which is demanded or required. The airframe had to be built to very specific requirements.

re-register /rɪˈdʒɪstr/ verb to register again. The aircraft had to be re-registered because of an administrative error.

rescue /rɪˈskjuː/ noun the act of freeing from danger. Early rescue depends on the rapid location of survivors. to free from danger. Passengers were rescued from the burning aircraft.

reserve /rɪˈzɜːv/ noun something kept back for possible future use. to keep something such as a seat for somebody. Seats 23A and 23B are reserved for Mr and Mrs Smith.

reserve fuel /rɪˈzɜːv fjuːzl/ noun fuel used only in a situation when the aircraft has to be in the air for a longer time than expected, as because of a go-around or diversion.

reservoir /rɪˈzɜːvaʊər/ noun a container for holding a store of fluid. A reservoir provides both storage space for the system fluid, and sufficient air space to allow for any variations in the volume of the fluid in the system.

reset /rɪˈset/ verb to set again. Instruments which need resetting in flight must be accessible to the crew. (NOTE: resetting – reset)

resettable /rɪˈsetəb(ə)l/ adjective possible to reset. Circular breakers are resettable protective devices.

residual /rɪˈzɪdjuər/ adjective referring to the residue of something.

residue /rɪˈzɪduː/ noun the remainder of something after the removal of the main part. The leaking oil left a sticky residue on the ground.

resin /rɪˈzɪn/ noun materials which are used with fillers and other components to form plastics, e.g., polyesters, epoxies and silicones. To make a composite it is necessary to combine the reinforcing glass fibres with some form of special glue or resin.

resist /rɪˈzɪst/ verb to fight off the effects of something. A tube resists bending in any direction but beams are designed usually to resist bending in one or two directions only. In order for an aeroplane to fly, lift and thrust must resist and overcome the forces of gravity and drag.

resistance /rɪˈzɪstəns/ noun 1. a force that opposes. The opposition of a body or substance to current passing through it. The shunt coil is made of fine wire which gives a high resistance and small current flow.

resistant /rɪˈzɪst(ə)nt/ adjective referring to something which is unaffected by a force, process or substance. Crash resistant and heat resistant materials. Some alloys are less resistant to corrosion than others.

resistive /rɪˈzɪstɪv/ adjective referring to resistance. Windscreen heating and electrical de-icing systems are resistive load circuits.
resistor /'rɪzɪstə/ noun a device used to control current in an electric circuit by providing a resistance. Components such as resistors, rectifiers and internal switches are all embedded in micro-size sections of semi-conductor material.

respect /'respekt/ noun in some respect in some way. The flat chart inevitably misrepresents the Earth’s surface in some respect. with respect to concerning or with reference to. Frost point is the temperature to which air must be cooled at constant pressure in order to reach a state of saturation with respect to ice.

respective /'rɪspektɪv/ adjective referring to two or more persons or things regarded individually. The passengers returned to their respective seats. the temperature and pressure of the fuel supply are electrically transmitted to their respective indicators, i.e. temperature to the temperature gauge and pressure to the pressure gauge.

respond /'rɪspænd/ verb 1. to reply or to answer. 2. to react, to act in return. the aircraft responds to the controls the aircraft altitude changes as a result of the pilot’s movements of the flying controls.

responder /'rɪspondə/ noun same as transponder.

response /'rɪspaʊns/ noun 1. an answer or reply. Despite repeated air traffic control transmissions, there was no response from the pilot. 2. a reaction in response to as a reaction to. The primary function of the outflow valves is to regulate the discharge of cabin air in response to the pressure signals received from the controller.

responsibility /'rɪspaʊnspəlɪtɪ/ noun the condition of being responsible. It is the responsibility of the captain to order an evacuation.

responsible /'rɪspaʊnsəb(ə)l/ adjective 1. being a source or cause. 2. Frontal systems are responsible for much of the weather and clouds which occur in temperate latitudes. 2. directing or being in charge, and open to blame if something goes wrong. Cabin crew are responsible for the well-being of passengers. responsible to someone answerable for one’s actions to somebody highly placed.

restore /'rɪstreɪb/ verb to return something to its original or normal condition. Loss of engine power should be fully restored when the control is returned to the cold air position.

restrict /'rɪstrɪkt/ verb 1. to make free movement limited or difficult. The narrow aisles of the aircraft restrict the rapid movement of people. 2. to limit. during the bomb-scare, entry to the airport was restricted to authorised people only. only authorised people could enter the airport.

restricted area /'rɪstrɪktɪd 'ɛərɪə/ noun airspace of a particular length, width and depth, within which the flight of an aircraft must be carried out in accordance with particular conditions.

restriction /'rɪstrɪkʃən/ noun 1. a narrowing or partial blockage. Any restriction in a pipeline will increase liquid velocity and produce turbulence. 2. a limitation. There are restrictions on the taking of photographs in the vicinity of the airport.

resistor /'rɪzɪstər/ noun a device used to control current in an electric circuit by providing a resistance. Components such as resistors, rectifiers and internal switches are all embedded in micro-size sections of semi-conductor material.

result /'rɪzʌlt/ noun a consequence or outcome. Engine oil and cylinder temperature will also increase as a result of higher combustion temperatures. verb to result from to happen as a consequence. The structural weakness resulted from a minor collision while taxing two years previously. to result in to produce as an effect. Failure to secure seat belts could result in serious injury.

resultant /'rɪzʊltənt/ adjective that happens as a result of something. The temperature of the land rises, causing the layer of air in contact with it to warm up and expand with a resultant decrease in density.
retain /riːtɛn/ verb to keep or to hold
 Retentivity is the ability of a material to retain magnetism. When fuel dumping, sufficient fuel must be retained for landing.

retract /rɪˈtrækt/ verb to move back, or to raise
 mechanically operated sequence valves ensure that the landing gear does not extend until the doors are open and that the landing gear is retracted before the doors close.

retractable /rɪˈtræktəb(ə)l/ adjective possible to pull back or raise a retractable undercarriage an undercarriage which can be raised into the fuselage or wings after use early aircraft had non-retractable undercarriages.

retraction /rɪˈtrækʃən/ noun the act of pulling back or raising a retraction of the undercarriage the raising of the undercarriage into the fuselage after use

return /rɪˈtɜrn/ noun the act of coming back or going back to a place • we’re waiting for the return of the aircraft. a radar return radar echo • adjective a return flight a flight back to the point of departure • verb to cause to come back or to go back to an earlier position or place • fly from a to b and return. • the auto-control will return the alterations to neutral as the aircraft returns to level flight.

return valve /rɪˈtɜrn vəlv/ noun a valve which allows flow of fluid in both directions

reveal /rɪˈvɪl/ verb to allow to be seen
 • radiographic inspection of the aircraft structure is able to reveal fatigue cracks without the need to dismantle the aircraft.

reversal /rɪˈvɜːs(ə)/ noun a change to the opposite position, direction, or order • stationary eddies can be hazardous, not only because of the down currents but also because an aircraft encountering the reversal of direction might have its airspeed momentarily reduced below stalling speed.

reverse /rɪˈvɜːs/ noun the opposite • one would expect a unit of humid air to be heavier than a similar unit of dry air but, in fact, the reverse is true. • adjective going backwards or in the opposite direction • reverse flow the flow of a fluid in the opposite direction to normal • verb to go backwards or in the opposite direction • to reverse a vehicle to make a vehicle go backwards

reverse panic /rɪˈvɜːs pænɪk/ noun a form of shock which makes passengers unable to comprehend the need for urgency

reverser /rɪˈvɜːsər/ noun a thrust reverser a device to change the direction of thrust so that it operates in the opposite direction to the normal direction • in many turbo-jet thrust reversers, clamshell doors direct the exhaust gases forward.

reverse thrust /rɪˈvɜːs ′θrʌst/ noun thrust in the opposite direction to normal in order to decelerate the aircraft after landing

reversible /rɪˈvɜːsəbl/ adjective that can be made to go backwards or to change direction • a reversible electric motor

 reversible pitch propeller /rɪˈvɜːsəbl ˈprɛspəlar/ noun a propeller which allows the aircraft to be propelled backwards when taxiing

reversion /rɪˈvɜːz(ə)n/ noun a return to an earlier condition or state • in smaller aircraft, reversion to manual
control is possible if complete loss of hydraulic power occurs.

revert /rɪ'vert/ verb to return to an earlier condition or state. The elevator system has the ability to revert to manual control after a hydraulic failure.

revolution /ˌrevəˈluːʃ(ə)n/ noun a rotation or turn about an axis or a revolution of the crankshaft. A 360° turn of the crankshaft.

revolutions per minute /ˌrevəluˈʃ(ə)nz pəˈmint/ noun the speed of an engine or the number of rotations of the crankshaft per minute. Rpm is the number of revolutions per minute that the engine crankshaft is making. The actuator control is sensitive to engine rpm. Abbreviation rpm, r.p.m.

revolve /rɪˈvɒlv/ verb to turn about an axis. The Earth revolves around the sun.

revolving /rɪˈvɒlvɪŋ/ adjective. Tropical revolving storms an intense depression of a kind that can develop over tropical oceans. Tropical revolving storms originate within 5–15° of the equator. Tropical revolving storms generally occur from June to October.

rhumb /rʌm/ noun one of the points of a compass.

rhumb line /rʌm lain/ noun 1. a regularly curved line on the surface of the Earth which cuts all meridians at the same angle. 2. a steady course taken by an aircraft along one compass bearing.

rhumb line direction /rʌm lain dərˈkeɪʃ(ə)n/ noun the average of all the great circle directions between the two points. Because the great circle direction between two points on the surface of the Earth is not constant, it is often more convenient to consider the rhumb line direction.

rib /rɪb/ noun one of many cross pieces of the airframe that provide an aircraft wing with shape and strength. Additional strength is required for the rib sections which are placed in the area of the undercarriage mountings, flaps, and power plant attachment point.

rich /rɪtʃ/ adjective referring to a mixture in which the ratio of fuel to air is greater than usual. Moving the mixture control lever forward to the rich position increases the amount of fuel mixing with the air.

rich mixture /rɪtʃ ˈmɪkstʃə/ noun a fuel/air mixture in which the proportion of fuel is greater than normal.

ridge /rɪdʒ/ noun 1. a long narrow hill with a crest. 2. a long zone of relatively high atmospheric pressure. A ridge of high pressure. On average, the wind backs with the passage of a ridge.

ridge waves /ˈrɪdʒ ˈwɜːvz/ plural noun oscillations about the stable state of the undisturbed air flow with the range of hills providing the disturbance.

rigging position /ˈrɪgin ˈpəzən/ noun an attitude of the aircraft in which the lateral axis and usually the longitudinal axis are horizontal. The aircraft was put into the rigging position.

rigid /ˈrɪdʒɪd/ adjective. Unbending, inflexible. The areas between the ribs are utilised to house fuel tanks which can be either rigid or flexible. Opposite flexible = rigid pipes pipes that do not bend easily.

rigidity /rɪˈdʒɪdɪtɪ/ noun inflexibility, stiffness. Extra strength and rigidity must be provided in the tail section for aircraft with a tail wheel unit.

rigid pipes = rigid structure a firm unbendable structure.

rime ice /ˈrɪm aɪs/ noun ice formed when individual droplets of water freeze rapidly on striking the aircraft surface.

rime ice /ˈrɪm aɪs/ noun ice formed when individual droplets of water freeze rapidly on striking the aircraft surface.

ring /rɪŋ/ noun a circle. Around the impeller is a ring of stationary vanes called a diffuser ring.

ripcord /rɪpˈkɔrd/ noun a cord that is pulled to release a parachute from its pack and open it.

RIS abbreviation radar information service.
rise /raɪz/ noun 1. an increase ◆ a rise in temperature 2. ◆ to give rise to to cause ◆ Hills and mountains may give rise to particularly severe turbulence ◆ verb 1. to move upwards ◆ air rises 2. to increase ◆ The temperature is rising. ◆ raise

risk /rɪsk/ noun the possibility of suffering harm or injury, danger ◆ When starting an engine, it is bad practice to pump the throttle lever as there is a risk of fire in the carburettor air intake. ◆ verb to take a dangerous chance ◆ to risk the lives of passengers to put the lives of passengers in danger by taking a particular course of action

rivet /ˈrɪvɪt/ noun a type of metal bolt or pin with a head on one end, inserted through one of the aligned holes in the parts to be joined and then compressed on the plain end to form a second head ◆ Tensile or compressive loading makes the joined materials tend to slide and break the rivet or bolt. ◆ verb to join with rivets ◆ The skin is riveted to both stringers and frames.

RMI abbreviation radio magnetic indicator

RNAV abbreviation area navigation

robot pilot /ˈroʊbət ˈpəʊlət/ noun same as autopilot

rocker arm /ˈrəʊkər ərm/ noun part of the valve mechanism in an internal combustion engine, which transmits the movement of the pushrod to the valve

rod /roʊd/ noun a thin straight piece of metal ◆ Aluminium rods and bars can readily be employed in the high-speed manufacture of parts.

rogallo /roʊˈɡæləʊ/ noun a fabric-covered delta-shaped wing that can be folded compactly, used on ultralight aircraft

role /roʊl/ noun function ◆ Movement of air plays a major role in the development of weather patterns. ◆ the role of the aircraft the type of operation the aircraft is required to perform

roll /rəʊl/ noun 1. a rotation about the longitudinal axis of the aircraft, created by movement of the ailerons ◆ Roll is produced by moving the stick to the left or right. ◆ bank 2. a flight manoeuvre with 360° rotation about the longitudinal axis of the aircraft ◆ Loops and rolls are aerobatic manoeuvres. ◆ verb to rotate the aircraft around its longitudinal axis ◆ Move the control column to the left to roll the aircraft to the left. ◆ to roll into a turn to roll or bank the aircraft so that it turns left or right ◆ By rotating the yoke the ailerons are moved and the aircraft rolls into a turn.

COMMENT: The difference between roll and bank is that roll is movement whereas bank suggests a fixed attitude of the aircraft. Consequently, a turn might be expressed in angles of bank: turn at a bank angle of 30°; and the movement to obtain the bank might be expressed as roll: roll the aircraft to the left.

roll cloud /rəʊl klaʊd/ noun cloud created in the rotor zone on the downwind side of mountain ranges

roller /ˈrəʊlə/ noun a cylindrical metal device which rotates ◆ The most common bearings used in gas turbine engine are the ball or roller type.

RON abbreviation remain overnight

root /roʊt/ noun ◆ the root of the problem the cause of the problem

rose /rəʊz/ noun ◆ compass rose the compass card or its marking of 32 points on a map ◆ An arc of the compass scale, or rose, covering 30° on either side of the instantaneous track, is at the upper part of the display.

rotary /ˈrəʊtərɪ/ adjective rotating ◆ rotary motion rotating movement

rotary actuator /ˈrəʊtərɪ ˈæktjuətər/ noun an actuator which rotates and operates a screw jack, e.g. to extend flaps

rotary inverter /ˈrəʊtərɪ ɪnˈvɜːrta/ noun a DC motor driving an AC generator, the output of which must be regulated to constant voltage and frequency

rotary wing aircraft /ˈrəʊtərɪ ˈwɪŋ ˈeɪkrɛft/ noun an aircraft with a rotor which provides lift, such as a helicopter

rotate /rəʊt/ verb to turn around on an axis or centre ◆ In the event of flame extinction in flight, the engine will continue to rotate, due to the air-
flow through it caused by the forward speed of the aircraft. The aircraft should be rotated to the recommended nose-up attitude for touch down. Counter-rotating propellers rotate in opposite directions.

**rotation** /ˈroʊʃən/ noun 1. the act of moving the control yoke or stick aft to raise the nose of an aircraft during the take-off run to facilitate the aircraft becoming airborne. Rotation should begin at about 60 knots. 2. the act of turning around an axis or centre. rotation of the earth. Rotation determines the frequency of the generator output.

COMMENT: The aircraft rotates around three axes: pitch = rotation around the lateral axis; roll = rotation around the longitudinal axis; yaw = rotation around the vertical axis.

**rotational** /ˈroʊʃənəl/ adjective rotating. The rotational movement of the propeller blades creates lift at right angles to the blade.

**rotor** /ˈroʊtər/ noun a device which turns about an axis or centre. The rotor blade of a compressor.

**rotor blade** /ˈroʊtər blɛd/ noun a long thin aerofoil on a helicopter rotor.

**rotorcraft** /ˈroʊtərkraft/ noun same as rotary wing aircraft.

**rough** /rʌf/ adjective 1. not smooth, having an irregular surface. Opposite smooth. rough air turbulent air. rough running referring to a piston engine which is not operating correctly. 2. not fully detailed. a rough estimate an approximate calculation, good enough for a given purpose. a rough drawing a quick drawing usually used to illustrate or explain.

**roughness** /ˈrʌfnəs/ noun unevenness of a surface. The strength of turbulence near the Earth’s surface depends largely on the surface temperature, the surface wind, and the roughness of the surface.

**rough terrain** /ˈrʌfn ˈterən/ noun uneven ground.

**rudder** /ˈrʌdər/ noun a control surface on the fin which rotates the aircraft about its vertical axis to produce yaw. The A320 retains a backup mechanical linkage for elevator trim and rudder to allow control in the unlikely event of complete electrical failure.

COMMENT: The rudder does not turn the aircraft. It is used, together with aileron deflection, to initiate turns, to balance forces in turns and to counteract yawing motions created by the propeller during flight. The rudder pedals are mounted on the floor of the cockpit.
rudder ball 200

rudder ball /'rʌdə bɔːl/ noun same as inclinometer
rudder pedal /'rʌdəˌpɛd(ə)l/ noun a foot-operated lever which moves the rudder. Just before take-off, the pilot should make sure that his or her feet are correctly positioned on the rudder pedals.

rule /ruːl/ noun 1. a standard and authoritative instruction or guide. According to the rules, your ticket must be paid for two weeks in advance. 2. as a rule usually. As a general rule, radio signals travel in straight lines.

rule of thumb /ˌruːl əv ˈθʌmb/ noun easily remembered, useful guide to a more complex principle.

run /rʌn/ noun a route or distance. 1. to extend. Magnetic lines of force run from the north magnetic pole to the south magnetic pole. 2. to operate an engine. An engine should be run at low r.p.m. (revolutions per minute) after flight to allow engine components to cool to a more uniform temperature.

run up /ˈrʌn ʌp/ noun. engine run-up the testing of a piston engine at high power, in a light aircraft, just before take-off. Make certain that the parking brake is on before doing engine run-up checks.

runway /ˈrʌnweɪ/ noun a strip of level, usually paved ground on which aircraft take off and land. Heathrow airport has four terminals and two main runways. To achieve a safe landing, an aircraft has to be controlled so that its wheels make contact with the runway smoothly. The aircraft lined up perfectly on the runway extended centre line. Abbreviation R/W

COMMENT: Large airports often have more than one runway, arranged to cope with varying wind directions. Some busy airports have parallel runways which can be used simultaneously.

runway visual range /ˈrʌnweɪ ˈvɪʒuəl ˈrɛnɪŋ/ noun the distance along a runway at which selected lights can be seen, adjusted to simulate approach visibility. Runway visual range is obtained by an observer standing at the side of the runway in the vicinity of the threshold counting the number of markers or lights visible along the side of the runway. Abbreviation RVR

rupture /ˈrʌptʃər/ noun the process of breaking open or bursting. Pressure in the fuel tanks must be controlled to prevent rupture or collapse. The impact ruptured the fuel tank.

RVR abbreviation runway visual range
R/W, RWY abbreviation runway.
S abbreviation south

safe /seft/ adjective free from danger ○ Approach to land must be made at a safe speed. ○ safe landing a landing which does not endanger people or damage the aircraft. ○ fail safe

safeguard /ˈseɪfɡɑːrd/ noun something done as a precaution ○ A propeller is feathered after engine failure, or as a safeguard when low oil pressure or excessive temperature have indicated the development of a possible defect. ○ verb to take action to make sure that something is protected from harm ○ A pressure maintaining valve is generally used to safeguard operation of important services, such as flying controls and wheel brakes.

safe life /ˈseft laɪf/ noun the principle of putting the least load or force on each component, so that it will last well beyond a plane’s expected life

safety /ˈsefti/ noun freedom from danger, injury or risk ○ Turbulence can have serious effects on aircraft safety and performance and makes air travel uncomfortable. ○ safety conscious the state of being aware at all times of the importance of safety and the means by which it is achieved and maintained

safety pilot /ˈseftiˌpɪltər/ noun a pilot present in the cockpit to ensure the safety of the flight, e.g. when a student is practising instrument flying

safety regulations /ˈseftiˌrɛgjəleɪʃənz/ plural noun rules or laws which must be followed to make a place safe ○ Equipment and furnishings on modern jet transports must comply with safety regulations concerning fire resistance.

safety straps /ˈsefti stræps/ plural noun device to keep a person in position in a seat

sailplane /ˈseɪiplən/ noun a light glider particularly well adapted to making use of rising air currents

St Elmo’s Fire /st ˌɛlməʊz ˈfaɪər/ noun a luminous electrical discharge sometimes seen on aircraft during storms

SALR abbreviation saturated adiabatic lapse rate

salvage /ˈsælvɪdʒ/ verb to save items of property which may be in danger of being lost ○ In the event of a crash landing in a remote area on land, an attempt should be made to salvage all items of survival equipment from the wreckage including beacons, rafts and raft equipment.

sample /ˈsæmpl/ noun a small amount which is representative of the whole ○ If a sample of fuel taken from a tank was found to be hazy or cloudy in appearance, this would indicate the presence of water in suspension. ○ If fuel contamination by water is suspected, a sample of fuel should be drained from the tank for inspection.

sandwich /ˈsændwɪtʃ/ noun a construction of three layers, the material of the one in the middle being different from the two on each side ○ Standard connectors consist of a metal coupling with a rubber sandwich joint.

SAR abbreviation 1. special aerodrome report 2. search and rescue (ICAO)
satisfactory /ˈsætɪsfa(k)tri/ adjective adequate, good enough For satisfactory operation, an engine requires an adequate supply of oil. ‘… during the engine run-up, check that the use of carburettor heat gives a satisfactory drop in rpm or manifold pressure’ [Civil Aviation Authority, General Aviation Safety Sense Leafllet].

satisfy /ˈsætɪsfai/ verb 1. to meet a particular prescribed standard Shell Avgas 100LL satisfies British specification. 2. to meet the needs or requirements of something To satisfy the requirements of aviation there are three types of meteorological offices for aviation, each with a specific role to fulfil.

SATNAV /ˈseɪtənv/ abbreviation satellite navigation

saturate /ˈsætjʊreɪt/ verb to cause a substance to combine with the greatest possible amount of another substance When a sample of air contains the maximum amount of water vapour for its particular temperature, it is said to be saturated. lapse rate

saturation /ˈsætjʊreɪʃ(ə)n/ noun the state of being filled with the maximum amount of something which can be absorbed, e.g. a sample of air which contains the maximum amount of water vapour for its temperature The various types of fog are classified by the manner in which saturation is reached. the moisture in the air reached saturation point and fell as rain the air could absorb no more water

SAS 202

SAS abbreviation stability augmentation system

satellite /ˈsætəleɪt/ noun an object launched to orbit the earth, usually receiving and transmitting signals, pictures and data Satellite communications improve the effective distribution of world area forecasts.

satellite navigation /ˈsætəlɪt nəˈveɪʃən/ noun a system of navigation which uses orbiting satellites to determine the position of an aircraft or point, in relation to the Earth’s surface. Abbreviation SATNAV

satisfactory /ˈsætɪsfa(k)tri/ adjective adequate, good enough For satisfactory operation, an engine requires an adequate supply of oil. ‘… during the engine run-up, check that the use of carburettor heat gives a satisfactory drop in rpm or manifold pressure’ [Civil Aviation Authority, General Aviation Safety Sense Leafllet].

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screen /skrɛn/ noun the surface of a TV or computer monitor on which the image is seen. The airborne weather radar (AWR) allows the range of cloud to be estimated from range markers displayed on the screen.

crump /skrʌmp/ noun a type of threaded connector used to fix things together by rotating it.

crump jack /skrʌmp dʒæk/ noun a lifting device with rotating input. Pitch trim is achieved by lowering or raising the tailplane leading edge with a screw jack powered by two hydraulic motors.

sea /sez/ noun 1. a body of salt water between land masses. Swissair Flight 111 crashed into the sea. 2. mean sea level the average level of the sea taking tidal variations into account. Altitude is the vertical distance between an aircraft - or a point or a level - and mean sea level. 2. a particular area of a body of salt water. 3. the North Sea, the South China Sea, the ocean.

sea-anchor /sez ənˈkɔːr/ noun a device under a raft to provide stability. Each life raft is equipped with a flame orange coloured canopy and a sea-anchor.

seaboard /ˈseɪbɔːrd/ noun US a coast.

seal /səl/ noun 1. a device that joins two parts and prevents leakage. An oil seal reduces the clearance between the rotating and static members. 2. Static seal. a seal which is part of a non-moving component. Static seals, gaskets and packing are used in many locations. 2. a way in which a liquid or gas may be prevented from escaping. Static seals, gaskets and packing effect a seal by being squeezed between two surfaces. Verb to join two parts in such a way as to prevent leakage. In pressurised aircraft, bulkheads are provided at the front and rear ends of the fuselage to seal off the crew compartment and the passenger cabin.

sealant /ˈsiːlənt/ noun a substance painted or sprayed onto a surface to prevent the escape of a liquid or gas. The integral fuel tank may be completely coated on the inside with a layer of sealant.

sea level /ˈsiː lɛv(ə)r/ noun the average level of the surface of the sea, used for measuring barometric pressure.

sealing compound /ˈsiːlɪŋ kəmpənду/ noun same as sealant.

seaplane /ˈsiːpliən/ noun a plane that can take off from and land on water.

search /sɜːtʃ/ noun an act of looking for something in order to find it. The aircraft reduced altitude and carried out a visual search for survivors. Verb to look for in order to find something. The investigators searched the scene of the crash for the flight data recorder.

season /ˈsiːzn/ noun one of the four natural divisions of the year, spring, summer, autumn, or winter. The amount of solar radiation received by the Earth depends on the season.

seasonal /ˈsiːzn(ə)l/ adjective 1. referring to the natural divisions of the year, or characteristic of a particular time of the year. Seasonal temperatures. Seasonal winds. 2. only lasting for a season. Seasonal work.

seasonal variation /ˈsiːzn(ə)l ˈveɪərənʃ/ noun a change occurring according to the season.

seat /sεt/ noun a place for sitting. Pilot’s seat. Window seat. A seat next to a window.

seated /ˈseɪtɪd/ adjective sitting, on your seat. Passengers should remain seated.

seating capacity /ˈsiːtɪŋ ˈkæpəsɪti/ noun the maximum number of people an aircraft, bus, etc., can seat.

secondary /ˈsekəndəri/ adjective 1. of the second rank in importance etc., not primary. 2. an induced current that is generated by a primary source.

secondary radar /ˈsekəndəri ˈriːdər/ noun a radar system in which the active target replies to the interrogation unit.

secondary surveillance radar /ˈsekəndəri ˌsɜːvərəl rɪˈdər/ noun a radar which uses ground equipment called interrogators and airborne equipment called transponders to...
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identify aircraft, determine altitude and range, etc. secondary surveillance radar (SSR) is normally used to supplement data from primary systems. Abbreviation SSR
section /ˈsektʃər/ noun 1. a component or part of a structure tail section and nose section of the aircraft the non-smoking section of the aircraft part of a text the book is divided into four sections, and the first four chapters form the first section. diagram of a solid object as it would appear if cut, so that the internal structure is displayed.
cross-section
sectional /ˈsektʃənl/ adjective referring to a section or composed of sections, showing a solid object as it would appear if it were cut.
sector /ˈsektər/ noun 1. part of the flight between an aircraft moving under its own power until it next stops after landing in its allocated parking position on some sectors, because of fuel costs at the destination, it can be economical to carry excess fuel. the portion of a circle inside two radii and the included arc a segment of airspace with its own team of air traffic controllers
secure /skjuːər/ adjective fastened or locked, safe overhead baggage lockers must be secure. verb to attach firmly, to fasten or to make safe. if the onset of turbulence is sudden, crew must immediately secure themselves in the nearest available seats.
security /ˈsektəri/ noun 1. safety people whose job is to protect buildings or other people against crime.
SELCAL noun a high-frequency radio system which alerts the crew of an aircraft to the fact that air traffic control is trying to contact them. full form selective call.
seldom /ˈseldəm/ adverb not often, rarely aircraft are seldom hit by lightning. the wet sump system of lubrication is seldom used on modern aircraft.
select /seltʃəlt/ verb to choose something such as a particular instrument or system setting a reverse thrust lever in the crew compartment is used to select reverse thrust. the cabin pressure controller is used to select cabin altitude.
selection /ˈsektʃəln/ noun 1. a choice of something such as a particular instrument or system setting by manual selection of the heating switch, the formed ice can be dispersed. a collection of carefully chosen things a selection of photographs.
selector /ˈsektələr/ noun a manually operated device like a switch, which offers a choice of settings turn the selector control. the purpose of this selector is to direct fluid to the appropriate side of an actuator.
self-contained /ˈself kanˈteɪnd/ adjective independent the auxiliary power unit is a self-contained unit.
self-positioning /ˈself pɔrˈˈzɛltʃən/ noun the positioning of the aircraft on the extended centreline of the runway using the on-board navigation system. also called centre fix.
semicircular /ˈsɛmɪˈsɪkJʊlər/ adjective in the shape of half a circle. most mathematical protractors are made of plastic in the shape of a semicircle.
semiconductor /ˌsɛmɪˈkɒnˈdɪktər/ noun a solid crystalline substance with electrical conductivity greater than insulators but less than good conductors. semiconductor material is used to make many electronic devices.
senior /ˈsənɪər/ adjective older or more important in rank senior cabin supervisor.
sense /sens/ noun 1. manner, way after turning the aircraft, the auto-control will operate in the opposite sense and return the ailerons to neutral as the aircraft returns to level flight. any of the physiological means by which we experience our surroundings: sight, hearing, smell, taste and touch. when flying in cloud, pilots must rely on the instruments and not on their senses. wisdom or natural intelligence he has a lot of (common) sense.
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of a word ○ The word ‘bearing’ is used in a lot of different senses. ● verb to detect automatically ○ The fire warning system is designed to sense two levels of temperature – overheat and fire. ○ sensor

sensitive /'sensitiiv/ adjective able to register very small differences or changes in conditions ○ The actuator is sensitive to engine rpm.

sensitivity /'sensitiTv/ noun the quality or state of being able to register very small differences or changes in conditions ○ Monitors detect disturbances which are below the sensitivity level of the gyros.

sensor /'sensə/ noun a device which receives and responds to a signal or stimulus ○ pressure sensor ○ temperature sensor ○ The inlet pressure is sensed by a single pitot-type sensor probe which is situated just in front of the compressor.

separate adjective /'spærət/ existing as an independent thing ○ Propellers consist of a number of separate blades mounted in a hub. ● verb /'spəreit/ to set or keep apart ○ Dry chemical extinguishants separate the oxygen element from the fire thus retarding combustion.

separation /'sepərēʃən/ noun 1. the condition of being spaced apart 2. the removal of something from a mixture or combination ○ The oil and air mixture flows over the de-aerator tray in the oil tank, where partial separation takes place.

separation standards /'sepərē'strends/ plural noun internationally agreed minimum separation limits for aircraft in flight

separator /'sepərētər/ noun a device which removes something from a mixture or combination ○ The water separator will extract a percentage of free moisture from the air.

sequence /'sikwəns/ noun a series of things or events which follow one another, an order ○ The ignition system provides a rapid series of sparks timed to fire in each cylinder in the correct sequence.

sequence valves /'sikswoʊns 'vælvlz/ plural noun a fluid flow controller which performs a number of actions in a particular order ○ Sequence valves are often fitted in a landing gear circuit to ensure correct operation of the landing gear doors and actuators.

series /'sɛriəz/ noun a number of things or events which come one after the other in a particular order ○ a series of photographs ○ a series of switches

series circuit /'sɛriəz 'sɜːkɪt/ noun an electric circuit connected so that current passes through each component of the circuit in turn without branching

serious /'sɛriəs/ adjective important, or giving cause for great concern or worry ○ serious damage ○ serious injury

serve /sɜrv/ verb 1. to act or to function as ○ In some aircraft, pressure gauges also serve as a maintenance check on leakage. 2. to be used for a purpose ○ Different colour-coded warning lights serve to alert the observer that something is wrong with the system.

‘...a recent incident in Argentina serves to highlight some of the many safety problems in Latin America’ [INTER PILOT]

service /'sɜrvis/ noun 1. a facility ○ A pressure reducing valve is often used to reduce main system pressure to a value suitable for operation of a service such as the wheel brakes. 2. work done for others as a profession ○ Automatic Terminal Information Service (ATIS) ○ Cabin crew provide a commercial service to passengers. 3. maintenance or repairs carried out ○ verb to do maintenance or repairs on ○ Jet engines are simpler to dismantle and service than piston engines.

serviceability /'sɜrvɪsəbɪləti/ noun the ability to function as required ○ When carrying out engine checks, it is usual to turn off the magnetos in turn to check their serviceability.
serviceable /'sərvɪsəbl/ adjective able to function as required. The pilot must make sure that the radio equipment is serviceable prior to take-off.

service area /'sərvɪs eəriə/ noun area where maintenance and repairs are carried out

service bay /'sərvɪs bei/ noun a space in the structure of an aeroplane where equipment can be located for maintenance or repairs. In most modern aircraft a number of the major components are grouped together in a hydraulic service bay which is easily accessible for routine servicing operations.

service bulletin /'sərvɪs ,bəlitn/ noun a notice issued by the manufacturer of an aircraft, engine or other equipment to alert people to problems with that equipment. Abbreviation SB

servicing /'sərvɪsɪŋ/ noun the action of carrying out maintenance and repairs. Accessibility of components and equipment during servicing enables work to be done more quickly.

servo /'sərvəʊ/ abbreviation servo-mechanism

servo-assisted /'sərvəəsɪstɪd/ adjective partially operated by a servomechanism. Servo-assisted brakes, servo-assisted steering

servo-control unit /,sərvəʊ ,kən'trəʊl ,juənt/ noun a unit, a combined selector valve and actuator, which moves a control surface. A servo-control unit is part of the system which relieves the effects of aerodynamic forces on the flight controls.

servomechanism /,sərvə'mekənɪzəm/ noun a device to convert input forces into much larger output forces. Two phase motors are normally used for very small or miniature motors in servomechanisms.

set /set/ noun a group of things which belong together. A set of figures. A set of instruments. A set procedure. To adjust to a particular point or figure. To put in a particular position. Set the throttle fully closed.

set down /ˌset ˈdaʊn/ verb to land an aircraft, or land somewhere in an aircraft.

setting /'setɪŋ/ noun 1. a particular figure or position which a device is adjusted to. The setting of the sub-scale of the altimeter to read QFE. QNH, etc. 2. the action of adjusting a device to a particular position, etc. The setting of the altimeter is done prior to take-off.

settle /ˈset(ə)/ verb to put in a particular position. When wheels are first fitted to an aircraft, the tyres tend to move slightly as they settle down on the rims.

several /ˈsevrəl/ adjective a number of but not many, more than a few. There are several types of instrument landing systems (ILS) in use.

several minutes a number of minutes.

severe /'vɪər/ adjective extreme or intense. Generally speaking, weather conditions can be described as light, moderate or severe, depending on the amount or intensity of the condition. Severe icing, bad icing, severe turbulence.

severity /'sɪvətɪ/ noun the amount, intensity or seriousness of a condition. When the wind is strong the vertical currents become quite vigorous with the resultant increase in the severity of turbulence.

SFAR abbreviation Special Federal Aviation Regulation

shade /ʃeɪd/ noun 1. intensity or richness of colour. Shades of colour of the landscape become lighter in misty conditions. 2. cover or shelter from the sun. Surface air temperature is the temperature recorded in the shade at a height just above ground level.

shadow /ˈʃeɪdəʊ/ noun an area which is not affected by full radiation because of partial or full blocking of rays by something between the area and the source of the radiation. Solar radiation does not exist at night when the rotation...
of the Earth creates a shadow zone from the sun. • Line-of-sight transmission path means that obstacles and terrain can create shadow zones.

**shaft** /ʃaft/ noun a long, generally cylindrical bar, especially one that rotates and transmits power • engine shaft • propeller shaft

**shaft horsepower** /ʃaft həˈpaʊər/ noun the unit used for stating the power delivered to the shaft of a turboshaft or turboprop engine. Abbreviation SHP

**shaker** /ʃeɪkər/ noun a device which shakes or vibrates violently • Large aircraft use a stick shaker to supplement the natural stall warning of buffet.

**shallow** /ˈʃæloʊ/ adjective not deep • shallow angle

**shallow depression** /ˈʃæloʊ dɪˈpreʃən/ noun an area of slightly low relative atmospheric pressure

**shape** /ʃeɪp/ noun form • The shape of an aircraft is determined by the requirement to provide an aerodynamic lift force great enough to support the weight of the aircraft and payload whilst in flight.

**sharp** /ʃaːp/ adjective 1. thin and capable of cutting or piercing • If a piece of thermosetting plastic is hit hard enough, it breaks into pieces with straight sharp edges. 2. clear • The sharp setting means the bandwidth is reduced to 1kHz (kilohertz) to minimise noise or interference. 3. clear and distinct • Cumulus clouds have sharp outlines.

**shock absorber** /ʃəkəbər/ noun device to minimise the shock to the main structure of the aircraft when it lands

**shock wave** /ʃək wəʊ/ noun compression wave caused by supersonic motion • As sonic speed is approached, the efficiency of the intake begins to fall, because of the formation of shock waves at the intake lip.

**shore** /ʃɔr/ noun a stretch of land at the edge of the sea or a lake, etc. • At a height of 3,000 feet it was possible to see the shore. • offshore, onshore

**shorten** /ʃɔrtən/ verb to make short or shorter in length or duration • Mis-handling of aero-engines during operation can cause considerable damage and wear which can shorten the life of the engine. • The length of the mercury
short-haul /ʃɔːt hɔːl/ adjective travelling over a short distance

short-haul flight /ʃɔːt hɔːl 'flɔːt/ noun a flight over a short distance, up to 1,000km ○ On short-haul flights, passengers are usually offered only light meals.

short-term conflict alert /ʃɔːt tɜːm 'kɒnflikt ə lert/ noun a warning that an aircraft may soon be flying too close to another aircraft

shot /ʃɔt/ noun a discharge ○ Extinguishing of a fire in an auxiliary power unit (APU) compartment is normally done by a single-shot fire extinguisher.

shower /ʃɔʊər/ noun a short period of rain or snow ○ Showers are forecast for the evening. ○ Snow showers are expected in the area.

SHP abbreviation shaft horsepower

shroud /ʃraʊd/ noun 1. an extension of a fixed surface of a wing towards the rear, which covers the leading edge of a movable surface hinged to it 2. any one of the lines by which the harness of a parachute is attached to the canopy

shunt /ʃaʊnt/ noun a low-resistance connection between two points in an electric circuit that forms an alternative path for a portion of the current ○ The shunt-wound generator, used in conjunction with a voltage regulator, is the most common type of DC (direct current) generator system for aircraft. Also called bypass

shutter /ʃʌtər/ noun a hinged door which controls the flow of air ○ oil cooler shutters ○ radiator shutters

SID abbreviation standard instrument departure

sidestick controller /ˈsaɪdɪstɪk kənˈtrəʊlər/ noun a small side-mounted control column used on aircraft such as the Airbus A340

sight /sایt/ noun 1. view ○ The fog cleared and the mountain came into sight. 2. ○ with the airfield in sight a transmission to air traffic control to confirm that the pilot can see the landing airfield 3. the ability to see using the eyes ○ verb to see something when it is a long way away ○ Sea marker dyes can only be used once and should only be used when a search aircraft is sighted.

sight glass /ˈsaɪt ɡlɑs/ noun a simple fluid-level gauge

SIGMET /ˈsɪɡmɪt/ abbreviation significant meteorological information

sign /sain/ noun 1. a small quantity or amount of something which may suggest the existence of a much larger quantity ○ Any sign of smoke or fire outside a wing exit means it cannot be used. 2. a display with letters and/or numbers, sometimes lit up ○ the 'fasten seat belt' sign ○ 'no-smoking' sign 3. a symbol such as: - , +, x or ÷, which represents an operation ○ verb to put one's signature on a document, a letter, etc. ○ Remember to sign the letter.

signal /ˈsaɪgl/ noun 1. a device, action or sound which passes information 2. a radio wave transmitted or received ○ As a general rule, radio signals travel in straight lines.

signals area /ˈsaɪɡnəlz ɑːrə/ noun an area on an aerodrome used for displaying ground signals

signals mast /ˈsaɪɡnəlz mɑːst/ noun a vertical pole on an aerodrome

signals square /ˈsaɪɡnəlz skwɔːr/ noun an area on an aerodrome from which signal flags are flown

signals tower /ˈsaɪɡnəlz ˈtɔːr/ noun a tall tower which controls the flow of air ○ oil cooler tower ○ radiator tower

signature /ˈsɪɡnətʃər/ noun the name of a person written in a special way to show that a document has been authorised or to show who is the author of a letter, etc. ○ Look at the signature to see who wrote the letter

significance /ˈsɪɡnɪfɪkəns/ noun importance ○ Except near a coastline where the sea breeze may augment the upslice motion, anabatic winds are of little significance.

significant /ˈsɪɡnɪfɪkənt/ adjective important and therefore noticeable ○ a significant change in temperature ○ The vertical currents and eddies formed by the flow of air over hills and mountains have a significant effect on aircraft encountering them.
significant meteorological information /ˌsiɡˈnifikəntˌmiəˈtiərəl ɪnˈfɔrmeɪʃən/ noun a weather advisory concerning weather conditions important to the safety of all aircraft, such as severe or extreme turbulence. Abbreviation SIGMET

significant points /ˌsiɡˈnifikəntˈpɔɪntz/ plural noun geographical positions used in air navigation, which are defined by latitude and longitude and have names consisting of five letters

significant weather chart /ˈsiɡˌnifikəntˈweðər ˈʃɑrt/ noun a weather chart with important weather information marked on it

signify /ˈsiɡnɪfɪk/ verb to indicate, to suggest, to mean ○ Buffet signifies the approach of a stall. (NOTE: signifies – signifying – signified)
silence /ˈsailəns/ noun the absence of sound ○ total silence the complete absence of sound ○ When an engine fire warning is received on the flight deck, the first action should be to silence the warning bell.
silencer /ˈsailənsər/ noun a device to reduce noise ○ In order to reduce the level of noise from the blower, silencers are incorporated in the main supply ducting.
similar /ˈsɪmələr/ adjective nearly the same ○ Turbo-shaft engines are similar to turboprop engines.
similarity /ˈsɪməˌlærəlɪti/ noun the fact of having features that are nearly the same ○ There are points of difference and similarity between the two aircraft.
simple /ˈsɪmpl/ adjective 1. basic, not complex ○ A simple fuel system consists of a gravity feed tank, a filter, a shut-off valve and pipes. 2. easy ○ a simple question
simplicity /ˈsɪmplɪsəti/ noun the quality of having a basic, uncomplicated design or concept ○ Because of its lightness, cheapness and simplicity, a fixed pitch propeller is often fitted to single-engine aircraft.
simplify /ˈsɪmplɪfɪ/ verb to make easy, to make less complex or complicated ○ Repair procedures are being further simplified by increasing use of cold setting resins.
simulate /ˈsɪmjuˌleɪt/ verb to imitate the conditions or behaviour of something ○ The computer program simulates the action of an aircraft.
simulated instrument flight /ˌsɪmjuˌleɪtɪdˌɪnstrəˈmənt ˈflæt/ noun an instrument flight carried out in a simulator on the ground or in a specially prepared aircraft with screens on the windows

simulation /ˌsɪmjuˈleɪʃən/ noun an imitation of a real situation, created often for training purposes ○ a simulation of an engine fire ○ The computer animation showed a simulation of the events which followed the explosion on board the aircraft.
simulator /ˌsɪmjuˌleɪtər/ noun a machine that is constructed to look like an aircraft cockpit with a full set of instruments, in which people can be trained to fly a particular type of aircraft

simultaneous /ˌsiːməˈlətniːs/ adjective happening at the same time ○ Most aircraft are now fitted with remote magnetic indicator displays which can be selected to show two simultaneous bearings from different radio navais.
sine /ˈsaɪn/ noun a trigonometric function defined as the length of the side opposite to an angle in a right-angled triangle divided by the length of the hypotenuse. Abbreviation sin

gliding /ˈsɪŋglɪŋ/ adjective one only
glider /ˈsɪŋgəl/ noun an aircraft with one engine only

glimpse /ˈglɪmpz/ verb to look quickly at something ○ He glanced around the room and caught a glimpse of a woman in evening dress.
glimpse /ˈglɪmpz/ noun a small part of something seen ○ He caught a glimpse of the river in the mirror.
glimmer /ˈglɪmər/ noun a faint light ○ He saw a glimmer of hope in his wife's eyes.
glimmer /ˈglɪmər/ verb to give a faint light ○ The sun was just beginning to gimmer in the east.
glimmer /ˈglɪmər/ noun a faint light ○ He saw a glimmer of hope in his wife's eyes.
glimmer /ˈglɪmər/ verb to give a faint light ○ The sun was just beginning to gimmer in the east.
site 210

pilot sits in the cockpit. (NOTE: sitting - sat)
site /sat/ noun a selected area of land ○ landing site ○ verb to position or to put in a particular place ○ Where it is impossible or inadvisable to site the localiser antenna on the runway centre line, it may be positioned to one side.
sitting /sɪtɪŋ/ adjective ○ sitting position
the position of a person who is on a seat ○ The correct technique of using the escape slides is to assume a sitting position.
situate /sɪˈteɪt/ verb to put in a particular place, to locate ○ The inlet pressure is sensed by a single pitot-type probe which is situated just in front of the compressor.
situation /sɪˈteɪʃ(ə)n/ noun 1. a location, the place where something is ○ The situation of the flight controls is important. 2. the conditions or circumstances in a particular place or at a particular time ○ The synoptic chart is a graphical representation of the general weather situation over a given area at a given time.
six character group /ˌsɪksˌkærəktəˈgrʊp/ noun a group of six letters and/or numbers
six degrees of freedom /ˈsɪks dɪˈfrɛzn/ noun the six types of movement that an aircraft must be able to make: forward, upward and downward, and roll, yaw and pitch
size /saɪz/ noun the extent of a thing, how big something is ○ Whether or not an object can be seen by aircrew at a given distance will depend on factors such as the size, shape and colour of the object.
skid /skɪd/ noun 1. a slide on slippery ground ○ Anti-skid braking systems are designed to prevent the brakes locking the wheels during landing, thus reducing the possibility of wheel skid. 2. a condition of uncoordinated flight then the aircraft moves away from the centre of a turn ○ Deflection of the ball in the turn coordinator indicates a slip or a skid. ○ anti-skid ○ Anti-skid ○ The aircraft skin is riveted to stringers and frames.
skip distance /ˈskɪp,dɪˈstæns/ noun the shortest distance at which a sky wave can be received ○ The higher the layer in which a direct wave signal is totally refracted and returns as a sky wave, the greater the skip distance.
skiplane /ˈskɪplɪn/ noun an aircraft equipped with skis for taking off from and landing on snow
sky /skai/ noun the atmosphere and outer space as seen from the earth ○ The higher the sun is in the sky, the more intense is the radiation per unit area.
skyjack /ˈskʌɪdʒæk/ verb to use force to take illegal control of an aircraft, especially a commercial aircraft, when it is in the air
sky wave /ˈskai wɜːv/ noun part of a radiated wave which is returned to Earth by refraction from the ionosphere
skyway /ˈskɔɪweɪ/ noun a route used by aircraft
skywriting /ˈskɔɪrətɪŋ/ noun 1. the use of an aircraft releasing coloured smoke to form letters in the sky 2. letters or a message formed in the sky by coloured smoke released from an aircraft
slack /slæk/ adjective 1. not tight ○ a slack cable ○ a slack ○ Early afternoon is a slack period of the day. 2. widely spaced ○ Throughout the tropics and sub-tropics, where pressure gradients are normally slack, the sea breeze is a regular feature. ○ Land and

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sea breezes occur in coastal areas when there is a slack pressure gradient.

slant /slænt/ noun a slope or inclination.

Distance Measuring Equipment (DME) is a radio aid which measures aircraft slant range to a ground beacon.

verb to slope  

The wing slants upwards from the root to the tip.

sleap /slæt/ noun a movable device on the leading edge of a wing which, when extended, creates a gap that allows air to pass smoothly over the top of the wing thus reducing the possibility of a stall.

The Socata Rallye is one of the few light aircraft with leading edge slats.

sleet /slɛt/ noun 1. melting snow or a mixture of rain and snow falling together. 2. US frozen rain in the form of clear drops of ice or glaze ice covering surface objects (note: Care should be taken to avoid any ambiguity)  

verb to fall in the form of sleet  

It is sleeting.

slide /slæid/ noun a device which allows continuous movement over a smooth surface  

verb to move continuously over a smooth surface  

Shear stress is the stress that resists the force tending to cause one layer of a material to slide over an adjacent layer. (Note: Sliding – slid)

slide raft /slæidʃæft/ noun an escape slide which, when detached from the aircraft, can be used as a life raft

slide rule /slæid ruəl/ noun a graduated device with sliding parts for performing complex mathematical operations

slight /slæt/ adjective small, minor  

a slight increase  

a slight drop in temperature a small decrease in temperature

slip /slip/ noun a condition of uncoordinated flight when the aircraft moves towards the inside of a turn.  

Slip is indicated by deflection of the ball in the turn and slip indicator.  

verb to move sideways towards the inside of a turning manoeuvre as a result of excessive bank (Note: Slipping – slipped)

COMMENT: To correct a slip, the pilot should decrease the bank, or increase rudder pressure on the same side as the deflected ball in the turn coordinator. Slips are often used in aircraft with no flaps to increase the rate of descent without increasing the airspeed.

slippery /slipərɪ/ adjective which is difficult to grip firmly because of wetness, smoothness, etc.  

a slippery surface such as a wet or snow-covered runway

slipstream /slɪstrɪm/ noun the flow of air sent backwards by an aircraft’s propeller

slope /sləʊp/ noun 1. a slanting surface or slanting piece of ground, an incline  

A slope of the runway may increase or decrease the take-off and landing runs.  

2. a state in which one end of an aircraft is higher than the other  

verb to be inclined, to be at an angle  

When the runway slopes upwards, away from the aircraft, the approach may appear to be higher than it actually is.

slot /slɒt/ noun 1. a groove or channel into which something can be fitted  

The float engages with a slot cut in the tube, so that, as the fuel level changes, the float moves up and down.  

2. the particular time at which an aircraft is scheduled to depart  

Flight GF 506 missed its slot and will have to wait 45 minutes for another.

sm abbreviation statute mile

smog /smɔɡ/ noun a mixture of smoke and fog  

Smog is now rare because of pollution control.

smoke /smɑuk/ noun a white, grey or black product formed of small particles given off by something which is burning  

The weather associated with visibility reductions by particles suspended in the atmosphere is classified either as fog, mist, haze or smoke.  

verb 1. to give off smoke  

Somebody noticed that one of the engines was smoking.  

2. to breathe in smoke from a cigarette, cigar, etc.  

Passengers are not allowed to smoke in the toilets.

smoke alarm /smaʊk əˈlaʊn/ noun a warning system that will ring or light
smoking /ˈsmɔːkin/ noun the act of breathing in smoke from a cigarette, cigar, etc. o the airline has a no-smoking policy the airline does not allow passengers to smoke during a flight

smooth /smɔːθ/ adjective 1. even and without lumps or dents o a smooth surface 2. not rough or turbulent o High ground will disturb the smooth, horizontal flow of air. Opposite rough o a smooth running engine an engine which is operating well

SMR abbreviation surface movement radar

snap roll /ˈsnæp rɔʊl/ noun a manoeuvre in which an aircraft turns a complete circle longitudinally while maintaining altitude and direction of flight

snow /snɔː/ noun atmospheric water vapour frozen into ice crystals and falling to Earth as white flakes o Snow cover tends to persist on north-facing slopes of mountainous regions after it has melted on south-facing slopes.

cold line unbroken line o a smooth surface which is not hard or a gas o Ice is a solid, water is a liquid and vapour is a gas.

solid-state /ˈsɒlɪd stɛt/ adjective referring to semiconductor devices

cold-plunge /ˈsɔːnp lʌŋ/ noun a vehicle built to push the snow from roads, tarmac, etc.

snowstorm /ˈsnɔːstɔːrm/ noun a heavy fall of snow accompanied by wind o The airport is closed because of the snowstorm.

soft /sɔft/ adjective not hard o Thermostatic materials become soft when heated.

soften /ˈsɔft(ə)n/ verb to make soft o Thermostatic materials are softened by many aircraft fluids.

cold /ˈsɔlə/ adjective referring to the sun

cold radiation /ˌsɔlə rɛərdi/ noun the total electromagnetic radiation given off by the sun

cold system /ˌsɔlə sɪstəm/ noun the sun and the planets governed by the sun

sole /sɔːl/ adjective only o the sole survivor of the air crash

coldoid /ˈsɔlɔʊnɔd/ noun a cylindrical coil of wire acting as a magnet when carrying electric current o Fuel is metered from the aircraft fuel system by a solenoid-operated control valve.

solid /ˈsɒlɪd/ adjective 1. referring to something which is not liquid or gaseous o Visibility is reduced by the presence of solid particles such as dust or sand in the atmosphere. 2. a solid line unbroken line o a substance which is not a liquid or a gas o Ice is a solid, water is a liquid and vapour is a gas.

cold-state /ˈsɒlɪd stɛt/ adjective referring to semiconductor devices

cold-state device /ˌsɒlɪd stɛt dɪˈvɑːs/ noun an electronic device that operates by using the effects of electrical or magnetic signals in a solid semiconductor material

cold-state technology /ˌsɔlɪd stɛt ˈtek nɔldʒi/ noun technology using the electronic properties of solids to replace those of valves

cold /ˈsɔlə/ adverb done by one person alone o to go solo or to fly solo o He flew solo across the Atlantic.

solution /ˈsʌlʃən/ noun 1. an answer to or means of solving a problem or difficulty o The navigation computer or slide rule is suitable for the solution of many different types of mathematical problem. 2. a liquid made by dissolving a solid or gas in water or some other fluid o Spillage from a lead acid battery may be neutralised by washing with a dilute solution of sodium bicarbonate.

cold /ˈsɔlə/ verb to find the answer to, or a way of removing, a difficulty or problem o The triangle of velocities is used to solve navigation problems.
somewhat  /ˈsʌmwət/  adverb  to some extent, a bit  o The usefulness of pure aluminium as a structural material is somewhat limited.

sonic /ˈsʌnɪk/  adjective 1. referring to sound 2. within the human hearing range  o sonic speed  the speed of sound

sonic boom /ˈsʌnɪk ˈbʊm/  noun a noise, due to shock waves, produced when an aircraft travels through the air faster than the speed of sound

sophisticated  /ˈsɒfɪstɪkətɪd/  adjective  highly developed and complex  o The electronic flight instrument system, commonly known as EFIS, is a highly sophisticated type of flight director system.  o The A340 is a sophisticated aeroplane.

sortie /ˈsɔrʒi/  noun an operational flight by one aircraft  o The test programme has accumulated 1,146 sorties.

sound /saud/  adjective  strong  o A stressed skin structure is used on modern aircraft which gives a sound structure with relatively low weight.  o noun something that can be heard and is caused by vibration of the surrounding air  o FM (frequency modulation) gives a wide range of sounds or a very high data rate.  o verb 1. to make a noise  o If the trim position is incorrect, a warning horn will sound when number three thrust lever is advanced for take off.  o sonic 2. to seem  o It sounds as if the pilot is having trouble.

source /sɔrs/  noun a supply  o Under emergency conditions, the battery may be the only source of electrical power.  o Jet aircraft have a ready source of compressed air from the compressor systems of their engines.

south /sauθ/  noun 1. a compass point on the mariner’s compass 180° clockwise from due north and directly opposite north  o Fly towards the south.  o south facing mountain side  the face of a mountain which looks towards the south  o adjective 1. referring to areas or regions lying in the south, referring to the compass point 180° from north  o the south side of the river 2. the southern part of a region or country  o South America  o South Dakota  o adv verb towards the south  o The aircraft is flying south.

southbound /ˈsauθbaʊnd/  adjective travelling towards the south  o a southbound flight

south-east /ˌsauθˈiːst/  noun the direction between south and east  o a region in the south-east of Canada  o adjective 1. situated in the south-east  o the south-east coast of England 2. blowing from or coming from the south-east  o adv verb towards the south-east  o We were heading south-east.

south-easterly /ˌsauθˈiːstəli/  adjective 1. blowing from or coming from the south-east  o a south-easterly wind 2. moving towards the south-east  o We were following a south-easterly direction.

south-eastern /ˌsauθˈiːstən/  adjective referring to or situated in the south-east  o the south-eastern coast of Spain

southerly /ˈsʌðəli/  adjective 1. situated towards the south  o the most southerly point of a country 2. coming from the south  o A southerly wind was blowing. 3. moving to or towards the south  o We were flying in a southerly direction.  o noun a wind which blows from the south

southern /ˈsʌðən/  adjective  situated in the south  o the southern hemisphere  o the southern Atlantic

southern hemisphere /ˈsʌðən ˈhemiˈsfer/  noun the area of the Earth to the south of the equator

South Pole /ˌsauθˈpəʊl/  noun the point which is furthest south on the earth  o to fly over the South Pole

southward /ˌsauθˈwɔːd/  adjective going towards the south  o to go in a southward direction  o adv verb US same as southwards

southwards /ˌsauθˈwɔːdz/  adv verb towards the south  o The aircraft was flying southwards.

south-west /ˌsauθˈwest/  noun the direction between south and west  o a region in the south-west of France  o adjective 1. situated in the south-west  o the south-west tip of England 2. blowing from or coming from the south-west
southeastern

adverb towards the south-east • We were heading southeast.
southeastern /ˈsau̯θ-/westən/ adjective 1. blowing from or coming from the south-east • a southeast-erly wind 2. moving towards the south-east • We were following a southeast-erly direction.
southern /ˈsau̯θ-/westən/ adjective referring to or situated in the south-west • The southern part of England includes Cornwall and Devon.
south wind /ˈsau̯θ-/winda wind blowing from or coming from the south (NOTE: A wind is named after the direction it comes from.)
space /speɪs/ noun 1. an empty area • A major problem with fuel storage is finding space within the airframe. 2. the physical universe outside the Earth's atmosphere • VHF (very high frequency) waves tend to pass through the layers of the ionosphere into space.
span /spæn/ noun the distance between two points
spar /spær/ noun the main longitudinal beam of an aircraft wing • Designing a wing skin, a rib or a spar as a single big item rather than assembling it from many smaller components minimises the number of structural parts.
spark /spɑrk/ noun a light produced by a sudden electrical discharge • verb to suddenly start a process or action • Crew must quickly establish control to ensure panic does not spark a premature evacuation.
spark plug /ˈspɑrk plʌɡ/, sparking plug /ˈspɑrkɪŋ plʌɡ/ noun a device screwed into each cylinder head in spark ignition engines, which initiates fuel combustion by an electric spark. • air gap. Also called sparking plug
spot /spɑt/ noun a streamlined covering for a wheel fitted on a light aircraft to reduce drag. Also called wheel fairing
spatial disorientation noun a situation of bad visibility and/or unusual manoeuvres which result in the pilot not knowing what attitude the aircraft is in • speaker /ˈspɛkər/ noun • loud-speaker
special /ˈspɛʃəl/ adjective particular, specific, or not ordinary • To make a composite, it is necessary to combine the reinforcing glass fibres with some form of special glue. • noun a special meteorological report
special aerodrome report /ˈspɛʃəl ərədrəʊm riˈpoʊ/ noun a report used if there are significant weather changes since the last meteorological aerodrome report. Abbreviation SAR
special VFR flight noun a controlled VFR flight permitted by air traffic control to fly within a control zone in meteorological conditions below visual meteorological conditions
specific /ˈspɛsɪfɪk/ adjective clearly defined and definite • Flight levels are specific pressure altitudes. • The airframe has to be built to very specific requirements.
specific gravity /spaˌsiːfɪk ˈɡreɪvɪtɪ/ noun the density of a substance compared with that of water, which is 1.00 (NOTE: This is the old name for relative density.)
specific heat /ˈspɛsɪfɪk ˈheɪt/ noun the amount of heat required to raise the temperature of a unit mass of a substance by one degree centigrade, expressed in joules per gram degree centigrade. • specific heat capacity /ˈspɛsɪfɪk ˈheɪt kəˈpæsɪtɪ/ noun the amount of heat required to raise the temperature of a unit mass of a substance by one degree centigrade, expressed in joules per gram degree centigrade. • specific heat of vaporisation /ˈspɛsɪfɪk ˈheɪt əv vərəˈpərɪzəʃən/ noun the amount of heat required to change a unit mass of a substance from a solid to a gas at constant pressure, expressed in joules per gram. • specific heat of fusion /ˈspɛsɪfɪk ˈheɪt əv fjuːʒən/ noun the amount of heat required to change a unit mass of a substance from a solid to a liquid at constant pressure, expressed in joules per gram. • specific heat of sublimation /ˈspɛsɪfɪk ˈheɪt əv səˈlaɪməʃən/ noun the amount of heat required to change a unit mass of a substance from a solid directly to a gas at constant pressure, expressed in joules per gram. • specific heat of vaporisation /ˈspɛsɪfɪk ˈheɪt əv vərəˈpərɪzəʃən/ noun the amount of heat required to change a unit mass of a substance from a solid to a gas at constant pressure, expressed in joules per gram. • specific heat of fusion /ˈspɛsɪfɪk ˈheɪt əv fjuːʒən/ noun the amount of heat required to change a unit mass of a substance from a solid to a liquid at constant pressure, expressed in joules per gram. • specific heat of sublimation /ˈspɛsɪfɪk ˈheɪt əv səˈlaɪməʃən/ noun the amount of heat required to change a unit mass of a substance from a solid directly to a gas at constant pressure, expressed in joules per gram. • specific heat of vaporisation /ˈspɛsɪfɪk ˈheɪt əv vərəˈpərɪzəʃən/ noun the amount of heat required to change a unit mass of a substance from a solid to a gas at constant pressure, expressed in joules per gram. • specific heat of fusion /ˈspɛsɪfɪk ˈheɪt əv fjuːʒən/ noun the amount of heat required to change a unit mass of a substance from a solid to a liquid at constant pressure, expressed in joules per gram. • specific heat of sublimation /ˈspɛsɪfɪk ˈheɪt əv səˈlaɪməʃən/ noun the amount of heat required to change a unit mass of a substance from a solid directly to a gas at constant pressure, expressed in joules per gram. • specific heat of vaporisation /ˈspɛsɪfɪk ˈheɪt əv vərəˈpərɪzəʃən/ noun the amount of heat required to change a unit mass of a substance from a solid to a gas at constant pressure, expressed in joules per gram. • specific heat of fusion /ˈspɛsɪfɪk ˈheɪt əv fjuːʒən/ noun the amount of heat required to change a unit mass of a substance from a solid to a liquid at constant pressure, expressed in joules per gram. • specific heat of sublimation /ˈspɛsɪfɪk ˈheɪt əv səˈlaɪməʃən/ noun the amount of heat required to change a unit mass of a substance from a solid directly to a gas at constant pressure, expressed in joules per gram. • specific heat of vaporisation /ˈspɛsɪfɪk ˈheɪt əv vərəˈpərɪzəʃən/ noun the amount of heat required to change a unit mass of a substance from a solid to a gas at constant pressure, expressed in joules per gram. • specific heat of fusion /ˈspɛsɪfɪk ˈheɪt əv fjuːʒən/ noun the amount of heat required to change a unit mass of a substance from a solid to a liquid at constant pressure, expressed in joules per gram. • specific heat of sublimation /ˈspɛsɪfɪk ˈheɪt əv səˈlaɪməʃən/ noun the amount of heat required to change a unit mass of a substance from a solid directly to a gas at constant pressure, expressed in joules per gram.
sphere /ˈsfɪər/ noun an object in the shape of a ball. • The Earth is not a perfect sphere. • A circle drawn on the surface of a sphere whose plane passes through the centre of the sphere is called a great circle.
spherical /ˈsfɜːrikl/ adjective shaped like a sphere. • The Earth is almost spherical in shape. • Drain cocks are generally simple, manually operated spherical valves.
spill /spɪl/ noun the running out of a liquid from a container, especially when it is unintentional. • an oil spill. • a fuel spill. • verb to cause liquid to run out of a container, usually unintentionally. • If fuel is spilled, it creates a fire hazard.
spillage /ˈspɪldʒ/ noun the spilling of a liquid. • Any fuel spillage must be cleaned up immediately. • NOTE: The word spillage is used in a more general sense than the word spill.
spin /spɪn/ noun 1. fast rotation. • the spin axis of the earth. 2. the continued spiral descent of an aircraft where the angle of attack of one wing is greater than the stalling angle. • verb 1. to rotate rapidly. • the Earth is spinning on its axis. 2. to put an aircraft into a continued spiral descent with the angle of attack of the mainplane greater than the stalling angle. • It is prohibited to spin a general-purpose light aircraft which are not equipped with a suitable harness.
spindle /ˈspɪndl/ noun a pin or bar which rotates or on which something rotates. • A cup anemometer has three cups, mounted on a spindle, that are driven by the wind causing the spindle to rotate.
spine /spɪn/ noun the longitudinal central part of an engine. • An annular inner and outer air casings form a tunnel around the spine of the engine.
spinning /ˈspɪnɪŋ/ verb 1. to be in the process of spinning.
spiral /ˈspərəl/ adjective winding continuously in circles as it ascends or descends.
spiral dive /ˈspərəl ˈdaɪv/ noun a dangerous uncontrolled turning descent of an aircraft in which rate of descent and speed increase.
spline /ˈsplɛn/ noun a groove in a shaft for meshing or engaging with another component.
split /spɪlt/ noun 1. a division. 2. a break along a line, especially in wood, plastic or rubber. • a split in a tyre. • verb 1. to divide. • Retractable undercarriages can be split into three groups. 2. to break along a line. • One of the tyres split on impact. • NOTE: splitting – split.
split bus system /ˈspɪt ˈbʌs ˈsɪstəm/ noun an electrical system in which there are two separate power generation systems. • The parallel system and the split bus system are both used to distribute electrical power.
spoiler /ˈspɔrlə/ noun a hinged surface on the upper wing which, when opened, decreases lift and increases drag. • If a problem occurs in the spoiler system a master caution light illuminates.
spontaneous /spɒnˈteɪnəs/ adjective happening without external cause.
spontaneous ignition may occur if oxygen is allowed to come into contact with oil or grease.
spool /spʊl/ noun one complete axial-compressor rotor. • The single spool compressor consists of one rotor assembly and stators. • verb to spool down to allow the revolutions of a tur-
spot /spot/ noun 1. a special or small place • Charts should be kept in a convenient spot in the cockpit. 2. a small roundish mark or piece • a spot of oil on a shirt • spot height the height of a particular place, e.g. a mountain peak, marked on a chart

spotlight /ˈspɒtlɑːt/ noun a powerful, often moveable light which illuminates a small area • A spotlight is mounted on the roof.

spray /ˈspreɪ/ noun 1. a body of liquid in fine drops • The generator is cooled by oil spray delivered by the constant speed drive section. 2. a container that sends out liquid in fine drops • verb to apply or to send out liquid in the form of spray

spray the coolant into the combustion chamber inlet.

spread /spred/ noun an extension of the area covered or affected by something • Measures are taken to prevent the spread of fire. • verb to extend the area of something • Strong jets of water should not be used on a liquid fire as this may cause the fire to spread. • The system sprays a quantity of fluid onto the windscreen, which is then spread by the wipers. (NOTE: spreading – spread)

spring /ˈsprɪŋ/ noun 1. a metal device which, when under tension, tries to resume its previous position • The pitch lock piston is held in the forward position by a spring. 2. the season between winter and summer

squall /ˈskwɔːl/ noun a sudden increase in wind speed lasting for several minutes • Surface squalls are due to the spreading out of strong down draughts at the surface. • Even with a light mean wind speed, squalls of 50 kt (knots) or more can occur with sudden changes in direction.

square /ˈskwɔː/ noun a shape with 4 equal sides and 4 right angles • adjective shaped like a square • a square panel

square foot /ˈskwɔːr fʊt/ noun a unit of measurement of area, which is one foot long by one foot wide

square metre /ˈskwɔːr metər/ noun a unit of measurement of area, which is one metre long by one metre wide • The room is 5m x 9m so the area is 45 square metres (45m²).

square root /ˈrʊt/ noun a divisor of a quantity that, when multiplied by itself, gives the quantity • 3 is the square root of 9.

squawk /ˈskwɔːk/ noun an identification code • transponder • verb to activate specific modes, codes or functions on a transponder • Garbling occurs when two signals are received simultaneously and can be resolved either technically or by making one of the aircraft squawk.

squeeze /ˈskwɪz/ verb to press hard from opposite directions • Static seals, gaskets and packing are used in many locations, and these effect a seal by being squeezed between two surfaces.

SSR abbreviation sunrise
SSS abbreviation sunset
SSR abbreviation secondary surveillance radar

stabilise /ˈstɪbɪlais/; stabilize verb to become steady and unchanging • After the engine has been started, engine speed is increased to 1000 r.p.m. (revolutions per minute) until cylinder head and oil temperatures have stabilised at normal operating temperatures.

stabiliser /ˈstɪbɪlaisər/; stabilizer noun a device to improve the tendency of an aircraft to return to its original attitude after being deflected

COMMENT: Some aircraft have an all-moving tailplane called a ‘stabilator’ (a combination of the words stabiliser and elevator).

stabilimator /ˈstæbɪlɪtər/ noun • stabiliser

stability /ˈstæbɪlɪtɪ/ noun 1. being stable or steady • The stability of the Cessna 150 makes it an ideal training air-
craft 2. a state of the atmosphere in which air will resist vertical displacement. When air moves away from its source region, the stability of the lower atmosphere changes.

COMMENT: Stability can be classified as three types. Positive stability is the tendency of a body to remain in its original state after being displaced. Light training aircraft have positive stability. Neutral stability is the tendency of a body to continue moving away from its original position after displacement. Negative stability is the tendency of a body to return to its original state after being displaced.

Stability augmentation system /stəˈbɪlɪtɪ əˈɡəmnətʃ(ə)ns/ noun a control system which automatically adjusts pitch and yaw to improve an aircraft’s stability. Abbreviation SAS

stable /ˈstɛbl/ adjective 1. steady 2. referring to an atmosphere in which there is little or no vertical movement. Layer cloud occurs in a stable atmosphere.

stack /stæk/ verb 1. to put one on top of the other. By stacking rows of horizontal dipoles one above the other, a well-defined electronic glide path can be transmitted. 2. to keep aircraft circling at different heights while they are waiting to land at an airport. A number of aircraft waiting to land at an airport that are circling at different heights

stacked /stækəd/ adjective circling at different heights prior to landing

stackup /stækəp/ noun same as stack

stage /steɪdʒ/ noun 1. one of several sections, steps, or levels into which a process can be divided. There are three stages in the life cycle of a thunderstorm: process of formation, development and decay. Calculate headings to steer for each stage of the flight. 2. cruise stage of the flight the section of a flight between top of climb after takeoff and start of descent to land. At a later stage, a group components forming part of an electrical or electronic system.

In the axial flow compressor, many stages of moving and stationary blades are needed, each row of rotors and a row of stators forming a stage.

stagger /ˈstæɡə/ noun a design in which the leading edge of one wing of a biplane projects beyond that of the other wing. Verb to make the leading edge of one wing of a biplane project beyond the leading edge of the other wing.

stall /stɔl/ noun 1. a loss of lift caused by the breakdown of airflow over the wing when the angle of attack passes a critical point. In some configurations it is possible for the buffet speed to be less than the required 7% margin ahead of the stall. 2. a situation in which an engine or machine stops suddenly because an opposing force overcomes its driving power. Compressor stall can be caused by ice formation in the air intake. Recovery verb to lose lift by the breakdown of airflow over the wing when the angle of attack passes a critical point. Many light aircraft stall when the angle of attack exceeds 15°.

recover

COMMENT: A stall has nothing to do with the engine stopping. An aircraft can stall at any airspeed and in any attitude.

stalling angle /ˈstælɪŋ əˈɡənləʊ/ noun the angle relative to the horizontal at which the flow of air around an aerofoil changes abruptly, resulting in significant changes in the lift and drag of an aircraft.

stalling speed /ˈstælɪŋ ˈspɪd/ noun the speed at which the angle of attack is such that lift over the wing surface breaks down.

COMMENT: Traditionally, an aircraft can stall at any airspeed, providing the angle of attack is great enough. Stalling speed is often used to refer to the speed below which the aircraft cannot remain airborne.

stall warning system /ˈstɔl ˈwɔrɪŋ ˈsɪstəm/ noun a system to warn the pilot that the aircraft is about to stall.
standard /ˈstændəd/ noun something, e.g. a quality or measure, that is officially recognised as an example that others must conform with. ○ Water is the standard for determining relative density. ○ a high standard of skill a high level of skill ○ adjective normal, officially or generally accepted ○ standard procedure normal procedure
standard atmosphere /ˈstændəd ˈætmosfər/ noun a unit of pressure defined as the pressure that will support a 760 mm column of mercury at 0°C at sea level, equal to 1.01325 x 10^5 newtons per square metre
standard instrument departure /ˈstændəd ɪnstrəmənt deˈpɑːtʃə/ noun a published navigational chart showing the route an aircraft must take as it takes off and climbs away from an airport. Abbreviation SID
standard parallels /ˈstændəd ˈpærələlz/ plural noun (in a conical projection) the parallels of latitude where the cone cuts the surface
standard pressure setting /ˈstændəd ˈprɛʃər ˈsetɪŋ/ noun 1013.25 millibars. Abbreviation SPS
standard rate turn /ˈstændəd rɛt ˈtaɪn/ noun a turn made at a precise number of compass degrees per second
COMMENT: Rate 1 turn = 180 ° in 1 minute, Rate 2 turn = 360 ° in 1 minute, Rate 3 turn = 540 ° in 1 minute, Rate 4 turn = 720 ° in 1 minute. Standard rate turns are made using particular angles of bank for specific airspeeds and are used while flying under Instrument Flight Rules (IFR). The pilot can make accurate turns to given headings by banking at the standard rate and timing the turn.
standard time /ˈstændəd ˈtaɪm/ noun a universally adopted time for all countries based on zone time
standby /ˈstændbə/ adjective secondary, able to be used as a back-up ○ Some aircraft use a ram air turbine that can be very useful as a standby power source in the event of failure of a complete main AC (alternating current) generating system.
standby ticket /ˈstændbə ˈtɪkɪt/ noun a cheaper air ticket bought just before departure time ○ There are no standby tickets to Montreal.
standing agreement /ˈstændɪŋ əˈɡrɛmənt/ noun an agreement between controlling units in different flight information regions to allow the transfer of control from one sector to the next without individual coordination, provided agreed parameters are met
standing wave /ˈstændɪŋ wɛv/ noun the motion of air downwind of a steep hill or mountain in which the high and low points of the wave do not move
STAR abbreviation standard arrival route
starboard /ˈstɑːbərd/ noun, adjective the right-hand side of an aircraft when facing forwards when inside the aircraft ○ The angle between heading and track of an aircraft is called drift and is expressed in degrees to the port or starboard side of aircraft heading. Opposite port
starter /ˈstɑːtər/ noun a device to start an engine
starter motor /ˈstɑːtər ˈmɔːtər/ noun in a piston engine, a small electrically operated device to turn the engine until ignition starts
start-up /ˈstɑːt ʌp/ noun a procedure to start an engine ○ After start-up, the engine accelerates up to idling speed.
state /stɑːt/ noun the existing condition of something ○ a state of equilibrium ○ Ice in a liquid state is called water. ○ Water in a gaseous state is known as vapour. ○ A logic gate is a two-state device i.e. on/off ○ in a poor state in a bad condition ○ verb to say or to mention, or to give information clearly ○ It states in the information that you must not open the can near a flame. ○ Please state your name and address.
statement /ˈstɛtəmənt/ noun something formally expressed in words ○ After the crash, the president and chief executive of the company made a brief statement to the waiting news reporters.
static /ˈstætɪk/ adjective not acting, not changing, passive or not moving ○ noun the background noise during radio transmission
static display /ˈstætɪk dɪˈspleɪ/ noun a display of parked aircraft on the ground
static electricity /ˈstætɪk ˈɛlektrɪsɪti/ noun electricity not flowing as a current ○ When the aircraft travels through the air, friction causes a charge of static electricity to be built up on the airframe.
static ground running /ˈstætɪk ˈɡraʊnd ˈrʌnɪŋ/ noun the running of the engine while the aircraft is stationary on the ground
static line /ˈstætɪk ˈlain/ noun a rope attached to an aircraft and a parachute that automatically opens the parachute when the parachutist jumps
static port /ˈstætɪk ˈpɔrt/ noun a small hole in the side of the aircraft which senses static pressure and is used in the operation of the altimeter, vertical speed indicator and airspeed indicator ○ Ensure that the static port is clear.
static pressure /ˈstætɪk ˈpreʃər/ noun the pressure of a fluid acting on and moving with a body
station /ˈstɛʃən/ noun 1. a particular assigned location ○ The interphone system allows the flight deck to communicate with cabin crew stations. 2. the location of a radio transmitter ○ a VOR station
stationary /ˈstɛʃənari/ adjective not moving ○ The aircraft was stationary on the ground with engine running.
stator /ˈstɛtər/ noun a fixed part of a rotary machine ○ The low-pressure compressor has large rotor blades and stator blades and is designed to handle a far larger airflow than the other two compressors. ○ A temperature probe is embedded into the stator of the generator and a meter is provided, so that generator stator temperature can be monitored.
status /ˈstɛtəs/ noun condition ○ The centre-zero ammeter tells the pilot the status of the aircraft battery.
statute mile /ˈstætjuː mɪl/ noun a non-SI unit of length equalling 1.609 kilometres ○ It is 20 statute miles to the airport. Abbreviation sm

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STC abbreviation supplemental type certificate
STCA abbreviation short-term conflict alert
steady /ˈstedɪ/ adjective constant and unchanging ○ The manual test will give a steady red light. ○ a steady wind a wind of constant speed and direction
steam fog /ˈstɪzm fɔɡ/ noun fog formed when cold air moves over relatively warm water ○ Visibility was impaired because of steam fog.
steel /ˈstɪl/ noun a metal alloy of iron, carbon and other compounds ○ stainless steel steel containing chromium and nickel that is highly resistant to corrosion ○ Tubing in parts of the system containing fluid at high pressure are usually made from stainless steel.
step /ˈstɛp/ adjective 1. sloping sharply ○ a steep angle of approach the angle formed by the aircraft approach flight path and the horizontal is greater than usual. 2. closely spaced ○ referring to marked changes in pressure or temperature in a relatively short horizontal distance ○ Cooling of the air in contact with the ground at night can cause a very steep inversion of temperature at the surface. ○ Pressure gradients in anti-cyclical curvature tend not to be steep.
steer /ˈstiːər/ verb to direct by using a wheel or control stick ○ The aircraft is steered on the ground by using the rudder pedals.
steering /ˈstreɪnɪŋ/ noun 1. guiding or directing ○ Steering is controlled by rudder pedals. 2. a system for guiding or directing a car, aircraft, etc. ○ Most modern light aircraft have nose-wheel steering but older tail-dragers are steered on the ground by using differential braking.
step /ˈstɛp/ noun 1. a stage ○ The first step in map reading is to orientate the chart. 2. one stair ○ Mind the step!
steward /ˈstjuːərd/ noun a male member of airline staff who look after passengers during the flight ○ a cabin crew, flight attendant, stewardess (NOTE: Different airlines use different terminology for their staff.)
stewardess /stjuːˈdes/ noun a female member of airline staff who look after passengers during the flight. ♀
cabin crew, flight attendant, steward (NOTE: Different airlines use different terminology for their staff.)
stick /stɪk/ noun the main hand control used by the pilot to control the aircraft roll and pitch ♀ Using fly-by-wire technology, the stalling angle cannot be exceeded regardless of stick input. ■
verb to become fixed, as if with glue ○ Ice crystals and snowflakes do not stick to airframes, and so icing is a problem only when super-cooled water droplets are present.
stiff /stɪf/ adjective 1. rigid or inflexible ○ Kevlar 49 is stiffer than glass, but only about half as stiff as carbon fibres. 2. not easily bent or turned ○ control surfaces may become stiff as a result of icing control surfaces may become difficult to move 3. ○ a stiff wind a fairly strong wind
stiffen /stɪf(ə)n/ verb 1. to make rigid or inflexible, to make stiff ○ Beams can be additionally stiffened in a downward direction by vertical and diagonal members. 2. to become stronger
STOL /ˈstɒl/ noun 1. a flying system that allows an aircraft to take off and land on a very short runway 2. an aircraft fitted with the STOL system. Full form short takeoff and landing
stop /stɒp/ noun 1. the end of a movement ○ to come to a stop to stop moving 2. a component which limits the distance that a moving part can move ○ An adjustable stop on the throttle control ensures a positive idling speed.
storage /ˈstɔrɪdʒ/ noun the act of storing something ○ A reservoir provides storage space for the system fluid.
store /stɔː/ noun 1. a supply ○ The maintenance section keeps a store of spare components. 2. US a shop ■ verb to put away for future use ○ A capacitor is a device with the ability to temporarily store an electric charge.
stores /stɔːz/ plural noun goods ○ Freight carrying aircraft have supporting members of greater strength to allow for the carriage of heavy stores.
storm /stɔːm/ noun a violent weather disturbance with high winds and rain or snow ○ Storms produced by daytime heating are most frequently encountered in the afternoon and early evening.
stow /stəʊ/ verb to place something in its correct position in the aircraft ○ Make sure the fire-extinguisher is stowed.
stowage /ˈstɔʊdʒ/ noun a space for stowing things ○ A multi-wheel combination has the advantage of smaller and lighter undercarriage structures, and wing stowage problems can be overcome by suitable mechanisms.
stowaway /ˈstəʊə,weɪ/ noun a person who travels secretly by hiding in an aircraft, or a ship, not paying the fare ○ The crew must be alert at all times to the possibility of hijacking, bombs and stowaways.
strain /streɪn/ noun deformation caused by stress
strap /stræp/ noun a long narrow strip of fabric with a buckle ■ verb ○ to strap to fasten a seat or safety belt around somebody
stratocumulus /ˌstrætəˈkjuːmələs/ noun a layer of small cumulus clouds lower than altocumulus, i.e. below 3,000 m ○ Light rain may fall occasionally from stratocumulus.
stratosphere /ˈstrætəsfɪə/ noun the layer of the atmosphere which extends from the tropopause to about 50 km above mean sea level ○ A cumulonimbus cloud may extend vertically, into the stratosphere.
stratus /ˈstreɪtəs/ noun a low-altitude layer cloud ○ Drizzle falls from shallow layer cloud such as stratus.
stream /strɪm/ noun a steady current of a fluid ○ Thermocouple probes are positioned in the gas stream, so as to obtain a good average temperature reading.
strength /streŋθ/ noun 1. the ability of a material to take pressure or support a load ○ Aircraft wheels require great strength and are constructed in two halves which are bolted together after the tyre is fitted. ○ Magnesium does not
possess sufficient strength in its pure state for structural uses, but when mixed with zinc, aluminium, and manganese it produces an alloy having the highest strength-to-weight ratio of any of the commonly used metals. 2. high-strength materials materials which are very strong, the degree of clarity and volume of a signal. 3. A radio wave loses strength as range increases. 4. the degree of dilution of a liquid. 5. Incorrect mixture strength may cause detonation. 6. intensity of radiation. 7. The strength of the sun’s radiation varies with latitude.

strengthen /ˈstrenθən/ verb to make strong or stronger. Some alloys are hardened and strengthened by heat treatment. 2. the wind is strengthening the wind is increasing in speed

strengthening /ˈstrenθɪŋ/ noun 1. the act of making stronger. Aircraft which require large apertures in the fuselage for freight doors, etc., need increased strengthening around these areas. 2. the fact of becoming stronger.

stress /stres/ noun 1. the load per unit area to which a body that resists distortion or change of shape is subjected by internal forces. 2. Turbine blades in the average jet engine vibrate at frequencies of 1 million per minute, and in each cycle experience stress. 3. a worried, anxious and tired state brought on e.g. by overwork. 4. He gave stress as the reason for wanting a week off work. 5. emphasis.

stretch /streftʃ/ noun a continuous unbroken length. 2. a stretch of coast. 3. verb to extend or enlarge beyond the proper limits. 4. Tensile stress is the resistance to pulling apart, or stretching, produced when two forces in opposition act along the same straight line.

strict /strɪkt/ adjective precise, exact. 2. Fuels for aircraft must conform to strict requirements. 3. All generator voltages, frequencies and their phase sequence must be within very strict limits to ensure proper system operation.

strike /strɪk/ noun an impact or collision. 1. verb to hit. 2. Stringers are made of a light alloy material.

strip /strɪp/ noun a long narrow piece, usually of the same width from end to end. 2. a strip of paper. 3. verb to dismantle. 4. After the collision, the engine was stripped down to its component parts.

stroke /strɔʊk/ noun any of a series of movements of a piston from one end of the fuselage to the other. 2. The connecting rod links the piston to the crankshaft.

structural /ˈstrəʊkʃəl/ adjective referring to the structure of something such as an aircraft. 2. As laid down in the flight manual, the structural limitations must never be exceeded.

structure /ˈstrəʊktʃər/ noun 1. something constructed. 2. Aircraft structure serves the same purpose for an aircraft as the skeleton for a human body.

strut /strʌt/ noun a bar or rod used to strengthen a structure against forces from the side. 2. A strut is designed to withstand compressive loads.

stub /stʌb/ noun a short rectangular extension. 2. The plan-form of a military air traffic zone is in the shape of a circle with a stub.

sub- /sʌb/ prefix 1. of less importance in rank. 2. below.

sub-beam /ˈsʌb biəm/ noun a less important or minor beam. A lobe is one...
subject  222

of two, four or more sub-beams that form a directional radar beam.

subject  /ˈsʌbdʒekt/  noun a topic or matter for discussion or study  A knowledge and understanding of the subject of ice accretion is essential in order that the hazard can be minimised.

subjected  /ˈsʌbdʒektid/  adjective  subjected to affected by or made to experience something  To maintain the pressure difference between two internal engine sections, which are subjected to air pressures of different values, a multi-air seal is used. (NOTE: There is an important difference between subject to and subjected to.)

subject to  /ˈsʌbdʒekt tu/  adjective likely to be affected by, liable to  The airspeed indicator is subject to error.  Turbine engines are subject to icing during flight through super-cooled droplet cloud.

subject  /ˈsʌbdʒekt/  verb to subject to to make something or somebody experience something, often something unpleasant  The aircraft was subjected to rigorous tests.

subject to  /ˈsʌbdʒekt/  verb to trans- form directly from the solid to the gaseous state or from the gaseous to the solid state without becoming a liquid  For hour frost to form on an aircraft the airframe temperature must be below 0°C (Celsius), so that the surrounding air is cooled to below its dew point and water vapour in contact with the aircraft skin is directly sublimated into ice crystals.

sublimation  /ˈsʌblɪˈmeʃən/  noun transformation directly from the solid to the gaseous state or from the gaseous to the solid state without becoming a liquid  In sub-zero conditions sublimation will occur when air is cooled below the frost point, producing a deposit of ice crystals.

sub-scale  /ˈsʌb skæl/  noun a secondary, not main, scale on an instrument  The barometric pressure is set on the sub-scale and the altimeter main scale displays height or altitude.

subsequent  /ˈsʌbˈskwənt/  adjective following in time or order  A structural prototype is put through cycles of stressing far more severe than can be expected during the aircraft's subsequent operational life.  A subsequent occasion a following occasion

subside  /ˈsʌbdıːs/  verb 1. to sink to a lower level  2. to become less active or strong  The storm subsided the storm grew quiet

subsidence  /ˈsʌbsədəns/  noun the act of sinking to a lower level  Descending air occurs because of subsidence in the high pressure belts of the sub-tropics and poles.

subsonic  /ˈsʌbˈsʌnɪk/  adjective flying at speeds slower than the speed of sound, or not designed to fly above the speed of sound

substance  /ˈsʌbstæns/  noun a material of a particular sort  Specific heat is the amount of heat required to raise the temperature of a substance by 1°C (Celsius) compared to the amount of heat required to raise the temperature of water by 1°C.

substantial  /ˈsʌbstænʃəl/  adjective considerable, important  Substantial damage a lot of damage  Substantial increase a big increase

subtend  /ˈsʌbˈtend/  verb to be opposite to and delimit  The angle subtended by an arc equal to one 360th part of the circumference of a circle is called 1° (degree).

subtract  /ˈsʌbtrækt/  verb to deduct or to take away  6 subtracted from 10 equals 4 (10 – 6 = 4).

subtraction  /ˈsʌbtrækʃən/  noun the operation of taking away or deducting  The major arithmetic operations are addition, subtraction, multiplication and division.

subtropical  /ˈsʌbtrəˈtɒpɪk/  adjective referring to the areas between the tropics and the temperate zone  In winter, the subtropical high retreats and gives way to cyclonic pressure patterns.

sub-zero  /ˈsʌb ˈziərəʊ/  adjective below zero degrees  In sub-zero conditions sublimation will occur when air is cooled below the frost point, producing a deposit of ice crystals.

success  /ˈsʌksəs/  noun the achievement of something wanted  The key to
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success in navigation is pre-flight planning.

successful /ˈsʌksɪf(ə)l/ adjective satisfactory, as wanted. The second attempt at landing was successful.

succession /ˈsʌskʃ(ə)n/ noun the process of following in a particular order. A succession of minor incidents created a more serious situation.

successive /ˈsʌskəsɪv/ adjective following one after the other without interruption. All aircraft remained grounded for three successive days because of fog.

such /sʌʃ/ adjective 1. of this kind. An example of such a chart is shown on page 3. 2. of a large enough extent or amount. The height of the cabin floor on large jet transports is such that serious injuries can occur by exiting through the doors when steps or ramps are not available.

suction /ˈsʌks(ə)n/ noun a force that causes a fluid or solid to be drawn into a space because of the difference between the external and internal pressures. In a fuel injection system, fuel is induced into the inlet port or combustion chamber by a pump rather than the suction caused by the venturi of a carburettor.

sudden /ˈsʌd(ə)n/ adjective immediate and without warning. A sudden change or sudden drop in temperature.

suffer /ˈsʌfa, sʌfər from/ verb to be affected by, to experience. Piston engines suffer from icing in moist air when the ambient air temperature is well above 0°C (Celsius).

sufficient /ˈsʌfɪʃ(ə)nt/ adjective enough. During pre-flight checks, the pilot must ensure that there is sufficient fuel for the flight.

suffix /ˈsʌfɪks/ noun an addition to the end of a word creating a new word. Apart from cirrus and stratus, which are complete names, all layer cloud names consist of a prefix according to height of base, and a suffix according to shape. (Note: In the word cloudless, -less is the suffix meaning without.)

suggest /ˈsədʒest/ verb 1. to indicate a possibility. A strong cloud echo on radar suggests that hailstones are present. 2. to mean, to imply. Heap clouds, as the name suggests, often have great vertical extent.

suit /sjuːt/ verb to meet the requirements of. On some engines, the ignition can be varied as the engine is running and is moved to suit the engine speed and load.

suitable /ˈsjuːtəb(ə)l/ adjective appropriate or right for a particular purpose. Taking into account the limits imposed by aircraft performance, a suitable route must be chosen.

sulfur /ˈsʌlfər/ noun US same as sulphur.

sulphur /ˈsʌlfər/ noun a yellow non-metallic chemical element. Turbine fuels tend to corrode the components of the fuel and combustion systems mainly as a result of the sulphur and water content of the fuel. (Note: The atomic number of sulphur is 16.)

sun /sʌn/ noun the result of two or more numbers added together. When the component velocities act in the same direction, the resultant velocity is equal to the sum of their speeds in that direction.

summarise /ˌsʌməraɪz/, summarise verb to present something in a shortened, concise form. The effects of ice deposits on aircraft can be summarised as follows: ... .

summary /ˈsʌmərəri/ noun a brief account of something more detailed. At the end of each chapter there is a summary.

sump /sʌmp/ noun the oil reservoir of a piston engine situated at its base. The oil level in the sump or tank is normally checked after the engine has been stopped for a particular length of time.

sun /sʌn/ noun a very bright star around which the Earth travels and which gives light and heat. The sun was just rising when we landed. The sun and the planets governed by the sun form the solar system.
sunrise /ˈsʌnraɪz/ noun the time when the upper edge of the sun appears on the horizon. Abbreviation SR

supplemental type certificate /ˈsəpləməntəl ˈtaɪp səpləmentəl ˈtaɪp/ noun a certificate issued by an airworthiness authority to indicate that a modification to an aircraft or engine design has been approved. Abbreviation STC

support /ˈsəpərt/ noun 1. a device to hold something in position 2. practical assistance 3. to make available for use, to provide 4. a certificate issued by an airworthiness authority to indicate that a modification to an aircraft or engine design has been approved. Abbreviation STC

support services /ˈsəpərt sərvɪs/ plural noun services provided to an aircraft while it is at an airport

support facilities /ˈsəpərt faˈlɪteɪz/ plural noun equipment and buildings used by ground staff when working on aircraft at an airport

suppressor /ˈsəpərəsər/ noun 1. a device to reduce noise interference 2. a suppression antenna

suppress /ˈsəpərəs/ verb 1. to prevent the development or spreading of something 2. Static interference can be reduced by installing suppressed antennas

suppression /ˈsəpərəsən/ noun 1. the prevention of the development or spreading of something 2. a fire suppression system

supremacy /ˈsəprəməsi/ noun 1. authority or power over others 2. the highest authority or power

supervise /səˈvɪz/ verb to manage or control

supervisor /səˈvaɪzər/ noun a person in charge of working on aircraft at an airport

superimpose /ˈsəpərəməpəs/ verb to lay or to place something over the top of something else

superimpose on the previous ones

superimpose to an aircraft or engine design

supersonic /ˈsəpərəsən/ adjective faster than the speed of sound 1. for sustained supersonic flight, tank insulation is necessary to reduce the effect of kinetic heating

supervisor /səˈvaɪzər/ noun a person in charge or senior cabin supervisor

supplement noun /ˈsəpləmənt/ an angle or arc that, when added to a given angle or arc, makes 180° or a semicircle 1. verb /ˈsəpləmənt/ to add to in order to make more complete 2. The main power plant fire detection system should contain an audible warning device to supplement the visual indication

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sion system 2. the prevention of electrical interference of a radio signal

suppressor /səˈpresə/ noun a device used in an electrical or electronic system to reduce unwanted currents, e.g. a resistor or grid ○ A suppressor improves the quality of the signal.

surface /ˈsʌrfaɪs/ noun 1. an outer covering of something, or the top part of something ○ the surface of the wing 2. the Earth’s surface or ground

surface air temperature /ˈsʌrfaɪs ˈeəˌtɛmpərətʃər/ noun the temperature recorded in the shade at a height just above ground level

surface front /ˈsʌrfaɪs ˈfrʌnt/ noun a weather front at the surface of the earth ○ The cirrus cloud can be 900 miles ahead of the surface front with a rain belt as wide as 200 miles.

surface heating /ˈsʌrfaɪŋ ˈheɪtɪŋ/ noun the heating of the ground by the sun

surface movement radar noun a type of radar used at airports to monitor aircraft traffic on the ground. Abbreviation SMR

surface synoptic chart /ˈsʌrfaɪs ˈsɪnəptɪk ˈʃɑrt/ noun a chart of a geographical area with symbols, fronts and isobars giving a representation of the weather over the area at a particular time

surface tension /ˈsʌrfaɪs ˈtenʃən/ noun the tension of the surface film of a liquid

surface wind /ˈsʌrfaɪs ˈwɪnd/ noun a wind which blows across the land surface

surge /ˈsɜrdʒ/ noun a sudden increase in something such as electrical power ○ engine surge instability in the power output of an engine ○ verb to move with force like a wave ○ If combustion pressure increases above compressor outlet pressure, the airflow will reverse in direction and surge forward through the compressor.

surplus /ˈsɜrpəls/ adjective excess, more than is needed ○ Fuel penalties can be incurred if fuel surplus to requirements is carried.

surround /səˈraʊnd/ noun something which encloses or borders ○ The design of windows, hatches or door surrounds is very critical. ○ verb to encircle or to enclose ○ The Earth is surrounded by the atmosphere.

surveillance /səˈvɛlənse/ noun the act of watching or monitoring

surveillance radar /səˈvɛlənse ˈreɪdər/ noun primary radar scanning, often through 360°

survey noun /ˈsɜrvəri/ a detailed examination ○ An aerodrome meteorological office maintains a continuous survey of meteorological conditions over the aerodromes for which it is designated to prepare forecasts. ○ verb /səˈvɜrv/ to determine the boundaries, area, or elevations of land by means of measuring angles and distances ○ Take care when using wooded areas to fix position because the cutting down of trees may have led to a change in shape since the map was made.

survival /səˈvərəl/ noun the fact of remaining alive after an accident ○ The survival of passengers in the sea depends on rapid location and rescue.

...survival training is a vital element of all aircrew knowledge. Just because modern aircraft are more reliable than their predecessors, the need for such training does not diminish " [Civil Aviation Training]

survival beacon /səˈvərəl/ noun a beacon which transmits a signal which enables search aircraft to locate survivors in the water ○ VHF and/or UHF survival beacons are carried on all jet transports.

survivor /səˈvərəvər/ noun a person who continues to live after an accident ○ Whilst awaiting rescue on land or at sea, survivors should avoid exposure and conserve energy. ○ The aircraft crashed into the sea and there were no survivors.

susceptible /səˈsɛptəbər/ adjective prone to, likely to be affected by ○ A rough surface is more susceptible to fatigue cracking than a smooth one, and for this reason highly stressed members are often polished.
suspect adjective /səspekt/ referring to something believed to be causing problems  ➤ The magnetic flaw detection technique is to induce a magnetic field in the suspect part and then to brush over it an ink containing a magnetic powder. ➤ verb /sə'spekt/ to believe to be the case  ➤ If fuel contamination by water is suspected, a sample of fuel should be drained from the tank for inspection.

suspend /sə'spend/ verb 1. to hang freely from a point  ➤ When it is freely suspended, a magnet will turn until one pole is towards the Earth's magnetic north pole. 2. to float freely in the air or in a liquid  ➤ The weather associated with visibility reductions by particles suspended in the atmosphere is classified as fog, mist, haze or smoke.

suspension /sə'spenʃən/ noun 1. the act of state of hanging freely from a point 2. the dispersion of particles in a liquid or gas  ➤ If a sample of fuel taken from a tank is hazy or cloudy in appearance, this indicates the presence of water in suspension.

sustain /sə'sten/ verb 1. to continue, to maintain  ➤ For sustained supersonic flight, some measure of tank insulation is necessary to reduce the effect of kinetic heating. 2. to receive, experience or suffer  ➤ The aircraft sustained major damage in the crash.  ➤ The pilot sustained minor injuries.

sweep /swip/ verb to move across quickly and with force  ➤ Cold arctic air sweeps over North America in winter.

sweepback /swipbæk/ noun an aircraft wing that slopes backwards towards the tail, forming an acute angle with the body of the aircraft

swell /swel/ noun a long wave on water that moves continuously without breaking  ➤ When ditching an aircraft the selection of a landing direction which will result in the minimum relative speed between the aircraft and sea swell will reduce impact forces and minimize structural damage.

sweptback /sweptbæk/ adjective referring to a wing that slopes backwards towards the tail of the aircraft

swing /swɪŋ/ verb 1. to move from side to side with some force  ➤ There is often a tendency for a propeller driven aircraft to swing or yaw on take-off. 2. ➤ to swing a compass to calibrate compass deviation by recording its value on a compass base while rotating the aircraft through 360° etc.

swirl /swɜːl/ noun a movement with a twisting motion  ➤ Swirls of smoke came out of the engine.

swirl chamber /swɜːl ˈfeɪrmbə/ noun a small chamber in the cylinder head to promote swirl  ➤ The usual method of atomising the fuel is to pass it through a swirl chamber, so converting its pressure energy to kinetic energy.

switch /swɪtʃ/ noun a device to open or break an electric current  ➤ There is an on/off switch on the front panel. ➤ centrifugal switch a switch operated by centrifugal force ➤ to connect or disconnect two lines by activating a switch  ➤ to switch on to start to provide power to a system by using a switch  ➤ Switch on the light. ➤ to switch off to disconnect the power supply to a device or system  ➤ Switch off the navigation lights.

symbol /ˈsɪmbəl/ noun a printed or written sign used to represent something  ➤ The work done by an electrical circuit or the power consumed is measured in watts and is given the symbol P.

symbolic /ˌsɪmˈbɒlɪk/ adjective referring to symbols  ➤ A symbolic code is used for synoptic charts.

symmetric /ˈsɪmtrɪk/, symmetrical /ˈsɪmtrɪk(ə)/ adjective referring to something which has an exact likeness of form on opposite sides of a central dividing line  ➤ The area covered by the forecast is divided into a series of grid or reference points at approximately 300 km (kilometres) symmetrical spacing.

symptom /ˈsɪmptəm/ noun a sign or indication of something, possibly a
Buffet caused by turbulent airflow acting on the tailplane is one of the first symptoms of the approaching stall.

synchronisation /ˌsɪŋkrənətʃən/, synchronisation noun occurrence at the same time or rate

Prior to engagement, when the aircraft is being flown manually, the autopilot system will be following the aircraft flight attitude, thus ensuring that synchronisation is achieved.

synchronise /ˌsɪŋkrənaɪz/, synchronize verb to cause to occur or operate at the same time or rate

The aircraft must be trimmed for the desired flight attitude before engaging the autopilot, which must be synchronised to maintain that attitude when it is engaged.

synchronous /ˌsɪŋkrənəs/, adjective referring to something operating at the same time or rate

Synchronous motors will run at constant speed and are small and light in weight.

synoptic /ˈsɪŋpətɪk/ adjective referring to something which gives a brief outline or general view of something more complex

With the addition of fronts and isobars, the synoptic chart provides a representation of the weather over a large area, at a particular time.

synthetic /ˈsɪnθetɪk/ adjective not natural, artificial

Mineral-based fluids are normally coloured red, and must be used with synthetic rubber seals and hoses.

system /ˈsɪstəm/ noun a group of interdependent parts forming and operating as a whole

an electrical system
tab /teɪb/ noun the hinged rear part of flight control surface used for trimming
Trim tabs remove the pilot's control loads by aerodynamically holding the control surface in the required position.

table /ˈteɪb(ə)l/ noun a set of facts or figures displayed in columns and rows
Charts are issued at UK meteorological offices and show, for selected locations, a table of winds and temperatures at selected flight levels.

tabular /ˌteɪbjuər/ adjective in tabular form
The most widely acceptable presentation of fuel data is in tabular form but graphical presentations may also be used.

Tacan /ˈtækən/ noun an aircraft navigation system that uses UHF signals from a transmitting station for distance and bearing. Full form Tactical area navigation aid

tachometer /ˈtækəmətər/ noun an instrument for the measurement of revolutions per minute of a rotating shaft
The pilot checks the tachometer and notes the resulting drop in r.p.m. for each magneto.

TAF abbreviation 1. terminal aerodrome forecast 2. aerodrome forecast (ICAO)

tail /teɪl/ noun the rear part of the aircraft
The tail section is the aft part of the fuselage to which is fitted the tail unit, comprising the tailplane, elevators, fins and rudders.

tail assembly /ˈteɪl əˌsɛmbli/ noun the aft part of the fuselage with the fin and rudder, tailplane and elevators attached

tail-dragger /ˈteɪl ˈd्रeɡə/ noun same as tailwheel aircraft (informal)

tailplane /ˈteɪplˌplɛn/ noun a horizontal stabiliser, a horizontal aerofoil at the rear of the aircraft
On most high performance aircraft the incidence of the horizontal stabiliser (or tailplane) can be varied in flight.

tail rotor /ˈteɪl ˈrɔrəʊ/ noun a small rotor on the tail of a helicopter that prevents the helicopter from spinning in the direction opposite to the rotation of the main rotor

tailskid /ˈteɪlˌskɪd/ noun a support or runner on the underside of the tail of an aircraft

tailspin /ˈteɪlˌspɪn/ noun a rapid and uncontrolled spiral descent of an aircraft

tail unit /ˈteɪl ˌjuːnɪt/ noun the rear part of the aircraft, usually consisting of the fin and tailplane

tailwheel /ˈteɪlˌwiːl/ noun a small wheel under the tail of an aircraft.

Also called tail-dragger

tailwheel aircraft /ˈteɪlˌwiːl əˌkraːfɪt/ noun aircraft with a small wheel at the tail instead of a nosewheel. Also called tailwheel conversion course

tailwind /ˈteɪlˌwɪnd/ noun a wind which is blowing in the same direction as the direction of movement or flight
Because of the tailwind, the flight took only six hours. Compare headwind
take off /ˈteɪk ˈɒf/ verb to leave the ground. When flying speed is reached the aeroplane takes off.

take-off /ˈteɪk ɒf/, take-off /ˈteɪk ɒf/ noun the procedure when an aircraft leaves the ground. The aircraft has to accelerate before take-off. There is a tendency for propeller driven aircraft to swing or yaw on take-off. Abbreviation T/O

take-off run /ˈteɪk ɒf , ˈrʌn/ noun the distance from the start of take-off to the point where the wheels leave the ground. Acceleration forces can be felt as the aircraft begins its take-off run.

take-off weight /ˈteɪk ɒf , ˈweɪt/ noun the weight of an aircraft at take-off, made up of its empty weight, plus the weight of its passengers, freight and fuel.

talk down /ˈtɔːlk ˈdaʊn/ verb to give advice to a pilot by radio on how to land an aircraft.

tan abbreviation tangent

tangent /ˈtændʒənt/ noun a straight line, curve or surface which meets another curve or curved surface at a point, but which, if extended, does not cut through at that point. The glide path is at a tangent to the runway. Abbreviation tan

tangential /ˈtænˈdʒənʃəl/ adjective positioned at a tangent to something else.
	
tank /ˈteɪŋk/ noun a large container for storing fluid. An aluminium alloy fuel tank is housed in each wing.

taper /ˈteɪpər/ verb to reduce in thickness towards one end. Fuel flowing from the float chamber passes through a jet, in which is positioned a tapered needle valve.

tapered wing /ˈteɪpəd wɪŋ/ noun a wing which becomes narrower in width from root to tip.

target /ˈtærɪt/ noun the indication shown on a radar screen resulting from a primary radar return or a radar beacon reply. In a secondary radar system, the target is active.

tarmac /ˈtærmæk/ noun the runway and taxiways of an airport. They were working fast to clear the snow from the tarmac.

TAS abbreviation true airspeed

task /ˈtæsk/ noun a function or duty. Present day transport aircraft are required to fly accurately, in all weather, for long distances or long periods of time and, in order to carry out this task efficiently, an autopilot is used.

taxi /ˈteɪksi/ verb to move an aircraft along the ground under its own power before take-off or after landing. Light aircraft can be steered while taxiing via a direct link from rudder pedals to the nosewheel. (NOTE: taxies – taxiing – taxied; the US English is taxiing.)

taxiing /ˈteɪksiŋ/ noun the movement of an aircraft along the ground under its own power before take-off or after landing. The taxiing of tail-wheel aircraft is more difficult than nosewheel aircraft. (NOTE: The US spelling is also taxiing.)

taxiway /ˈteksɪweɪ/ noun a tarmac surface connecting the ramp or apron to the runway. It is given over to runways, taxiways and aprons.

TCA abbreviation terminal control area

TCAS abbreviation traffic alert and collision avoidance system

TCDS abbreviation type certificate data sheet

technical /ˈtekən(ə)l/ adjective 1. referring to mechanical subjects or applied sciences. A technical education. 2. referring to the mechanical, electrical, hydraulic or pneumatic systems of an aircraft. A technical problem with the aircraft prevented it from taking off on time.

technique /ˈteknɪk/ noun a special method for doing something. The preparation of charts is done by computer using numerical forecasting techniques.

technology /ˈtekənɒlədʒi/ noun the study and use of the mechanical arts or applied sciences. New technology.

new technology

new electronic equipment. The use of fly-by-wire in airliners was delayed to allow thorough development and
encourage universal acceptance of the new technology.

TEHP abbreviation total equivalent horsepower

telemetry /teˈlemtrɪ/ noun the work of recording and transmitting data about an object situated at a distance from the observer

TEMP /temp/ abbreviation temperature

temperate /ˈtempərət/ adjective mild, not extreme ○ Cold air in temperate latitudes is usually unstable.

temperature /ˈtempərətʃər/ noun a measurement, in degrees, of the intensity of heat of a body ○ Ground temperature is the temperature recorded by a thermometer placed at ground level. ○ The altitude and temperature of the tropopause are of concern to aircrew.

temperature error /ˈtempərətʃər ɪərə/ noun the variation in pressure altitude caused by a deviation of temperature from ISA

tempo /ˈtempəʊ/ noun the speed of an activity ○ The flow of passengers to and tempo of evacuation will be influenced by the number of exits available.

TEMO /ˈtempəʊ/ abbreviation temporary (ICAO)

temporary /ˈtempərərɪ/ adjective lasting for a short time, not permanent ○ The indicator ‘tempo’, followed by a 4-figure time group indicates a period of temporary fluctuations to the forecast meteorological conditions which may occur at any time during the period given. Opposite permanent

tend /tend/ verb to be apt or inclined to do something more often than not ○ Depressionst tend to move around large anticyclones following the circulation of wind. ☑ the weather tends to be wet in the UK in the winter the weather is often, but not always, wet

tendency /ˈtendənsi/ noun an inclination, situation or condition which occurs more often than not ○ There is a tendency for propeller-driven aircraft to swing or yaw on take-off. ☑ he has a tendency to be late he is often late ☑ he has a tendency to forget things he is forgetful

tensile /ˈtensəl/ adjective referring to stretching or pulling out ○ Reinforced plastic may have to support a tensile load, a compressive load or a bending load.

tensile load /ˈtensəl ləʊd/ noun the load caused by forces acting in opposite directions away from each other

tensile strength /ˈtensəl streŋθ/ noun the strength of a structure to resist forces pulling it apart from opposite directions

tensile stress /ˈtensəl streʃ/ noun the forces that try to pull a structure apart from opposite directions

tension /ˈtenʃən/ noun a strained condition resulting from forces acting in opposition to each other ○ A rod which is bent is shortened or in compression on the inside of the bend and is stretched or in tension on the outside of the bend.

term /tɛrm/ noun 1. a word or expression ○ The term ‘payload’ includes passengers, baggage and freight. 2. a limited period of time ○ a 5 year term a period of 5 years in the long term when considering a long period of time ○ short term forecast a weather forecast for the next few hours only

terminal /tɜːmɪn(ə)l/ adjective referring to a limit or to a final point n noun 1. the departure and/or arrival building at an airport ○ The flight leaves from terminal three at Heathrow airport. 2. an electrical connection point ○ The negative terminal of the battery is marked -.

terminal aerodrome forecast /tɜːmɪn(ə)l əˈɛərədrom ˈfɔːkɑːst/ noun the weather forecast for the area around an aerodrome ○ In terminal aerodrome forecasts, the height of the cloud base forecast is above airfield level unless otherwise stated. Abbreviation TAF

COMMENT: TAFs are scheduled four times daily for 24-hour periods beginning at 0000Z, 0600Z, 1200Z, and 1800Z.
terminal airfield /ˌtɜːmɪnəl ˈeərflɪd/ noun the airfield at which a flight finishes

terminal area forecast /ˌtɜːmɪnəl ˈeərflɔːr / noun the weather forecast for the area around an airport. Abbreviation TAF

terminal control area /ˌtɜːmɪnəl ˈkəntrəl ˈeərə/ noun an air traffic control area established at the meeting place of a number of routes near one or more major airports. In some areas where there is a local concentration of traffic, terminal control areas are set up. Abbreviation TCA, TMA

terminate /ˌtɜːmɪnɪt/ verb to end, or to bring to a close. The flight terminates in New York. The transmission terminated abruptly. The evacuation was carried out at a slower rate, thereby minimising the risk of injury to passengers.

therm al activity /θərməl ˈæktɪvəti/ noun 1. a series of operations to find out if something is working well. The manual test for the engine fire warning system will give a steady red light on all the fire control handles. 2. an examination to assess the knowledge of a person. There is a navigation test for students at 0800 hours. A test pilot who flies new aircraft in order to check their performance. The anticlimax test for the engine fire warning system will give a steady red light on all the fire control handles.

thereafter /ðeəˈɑːfθər/ adverb after that, beyond that. Meteorological visibility is given in metres up to 5,000 metres and thereafter in km (kilometres).

terra tial /təˈreʃəl/ adjective referring to the earth. Clear skies allow terrestrial radiation to escape.

territory /ˈterɪtɔrɪ/ noun the extent of the surface of the Earth governed by a particular country, ruler, state, etc. All places in the same territory, or part of the same territory, maintain a standard of time as laid down by the government responsible for that territory.

tertiary /ˈtɜːrəri/ adjective referring to something which is third in order of rank, behind primary and secondary. Tertiary structures, for example fairings, wheel doors and minor component brackets, are essential parts of the airframe.

tertiary radar /ˈtɜːrəri ˈreɪdər/ noun long-range navigation aids

test /test/ noun 1. a series of operations to find out if something is working well. The manual test for the engine fire warning system will give a steady red light on all the fire control handles. 2. an examination to assess the knowledge of a person. There is a navigation test for students at 0800 hours. A test pilot who flies new aircraft in order to check their performance. The anticlimax test for the engine fire warning system will give a steady red light on all the fire control handles.

theory /ˈθɪəri/ noun a system of ideas or principles explaining something. The theory of navigation must be studied before any practical plotting exercises are done.

theory of flight /ˈθɪəri əv ˈflæt/ noun the ideas and principles which contribute to our understanding of how things fly.

thereafter /ˌðeəˈɑːfθər/ adverb after that, beyond that. Meteorological visibility is given in metres up to 5,000 metres and thereafter in km (kilometres).

therefore /ˌðeərˈɑːθɔr/ adverb as a result, consequently. At small throttle open-ings, the depression at the choke is very small and therefore no fuel flows from the main jet.

thermal /θɜːməl/ adjective referring to heat. Intense surface heating causes thermal currents to develop and create convection. A thermal is a rising current of relatively warm air in the lower atmosphere. Glider pilots circle in thermals in order to gain height.

thermal activity /θɜːməl ˈæktɪvəti/ noun a period of time when there is a lot of vertical movement of air caused by heating. Cumulus clouds...
thermal barrier

may develop because of thermal activity resulting from the warming of the surface

thermal barrier /θɪrməl ˈbɑrər/ noun: the heat caused by air friction on an aircraft flying at high speed

thermo- /θɪrməʊ/ prefix: heat

thermocouple /θɪrməkˈpaʊr/ noun: a device for measuring temperature. Variations in temperature of the cooling air will give some indication of engine trouble through a thermocouple system to a temperature gauge.

thermodynamic /θɪrməˈdɑmətɪk/ adjective: referring to the conversion of one form of energy into another and how this affects temperature, pressure, volume, mechanical action and work

thermometer /θɜrməˈmiːtər/ noun: an instrument for measuring temperature. Ground temperature is the temperature recorded by a thermometer placed at ground level.

thermoplastic /θɜrməˈplæstɪk/ noun: a type of plastic which can be softened by heating then shaped, then softened again by heating

thermosetting /θɜrməˈsetɪŋ/ noun: a type of plastic which is heated while being shaped but which cannot be softened by reheating. If a piece of thermosetting plastic is hit hard enough, it breaks into pieces with straight sharp edges.

thick /θɪk/ adjective
1. of great or particular extent between two surfaces. a 1cm thick steel bar. This sheet of aluminium is not very thick.
2. with a large diameter. a thick wire. dense or thick fog. thick cloud.

thickness /ˈθɪknəs/ noun
1. the extent between two surfaces. In monocoque construction, there is no internal stiffening because the thickness of the skin gives strength and stability.
2. the extent of the diameter of a wire.

thin /θɪn/ adjective
1. of small extent between two surfaces. a thin layer of paint. with a small diameter.

wire. not dense. thin mist. Altostratus cloud is thin enough for the sun to be dimly visible.
2. a small extent of the diameter of a wire. the state or condition of being thin

thorough /θɜrə/ adjective complete. All cabin crew must have a thorough knowledge of fire fighting equipment and procedures. a thorough inspection: a very detailed, comprehensive inspection

THP abbreviation: thrust horsepower

three-letter group /θriːˈlɛtər ˈgrɒup/ noun: three letters of the alphabet found together

three-point landing /θriːˈpɔɪnt ˈlændɪŋ/ noun: an aircraft landing in which the two main wheels of the landing gear and the nosewheel or tailwheel touch the ground at the same time

threshold /θrɛθˈhold/ noun: the beginning of the part of the runway, usable for landing. Runway visual range is obtained by an observer standing at the side of the runway in the vicinity of the threshold counting the number of markers or lights visible along the side of the runway.

COMMENT: The threshold is marked with a single white line on visual runways or by eight parallel white lines arranged longitudinally in two groups of four each side of the runway centreline for runways with instrument approach/landing facilities.

throttle /θrəˈтол/ noun: a throttle lever. a throttle valve. a verb to throttle back to reduce engine power. Throttle back to increase the rate of descent.

COMMENT: The verbs 'open' or 'advance' (= to increase engine power) and 'close' or 'throttle back' (= to decrease engine power) are frequently used by instructors to explain the required movement of the throttle lever in the cockpit.

throttle lever /θrəˈтол/ noun: a device operating the throttle valve.
When starting an engine, it is inadvisable to pump the throttle lever because of the risk of fire.

throttle quadrant /θrəʊnt(ə)ləʊd/ noun an arc-shaped device in which the throttle levers move

throttle setting /θrəʊnt(ə)l ˌsetɪŋ/ noun the particular position of the throttle which gives a required revolutions per minute or power

throttle valve /θrəʊnt(ə)l vəvl/ noun a device controlling the flow of fuel in an engine

throughout /θruːaut/ adverb from the beginning to the end of a time or place ○ Emergency lighting is provided throughout the cabin. ○ Heavy snow fell throughout the night. ○ throughout the life of the aircraft during the entire life of the aircraft ○ throughout the world ○ throughout the year from January 1st to December 31st

thrust /θrʌst/ noun a force produced by a propeller, jet or rocket ○ A propeller is a means of converting engine power into a propulsive force known as thrust. ○ In order for the aircraft to increase speed, thrust must overcome drag. ○ reversal, reverser verb to push suddenly with force ○ A nozzle is an opening at the rear of a jet engine through which exhaust gases are thrust. (Note: thrusting – thrust)

thrust horsepower /θrʌst 'hɔːspəʊər/ noun the amount of horsepower of an engine that is transformed into thrust. Abbreviation THP

thrust reversal /θrʌst rɪˈvɜːrsəl/ noun setting of throttle levers to provide thrust in the opposite direction to decelerate the aircraft after landing

thunder /ˈθʌndər/ noun the noise created by the violent expansion and contraction of air momentarily heated by a lightning discharge ○ Thunder immediately following the flash of lightning usually indicates that the storm is overhead.

thunderstorm /ˈθʌndəstɔːrm/ noun a violent weather condition in which wind speeds increase, rain or hail falls and there is lightning activity ○ Thunderstorms occur in well-developed cumulonimbus clouds. ○ The process of formation, development and decay of a thunderstorm.

thunderstorm activity /ˈθʌndəstɔːrm ək,ˈtɪvəti/ noun the occurrence of weather conditions associated with thunderstorms, such as rain, thunder, wind or lightning.

thus /θʌz/ adverb 1. in this way ○ This device fits with the other this. 2. therefore, as a result ○ The glide slope and localiser beam signals control the aircraft about the pitch and roll axes, thus maintaining alignment with the runway. ○ Anti-skid braking systems are designed to prevent the brakes locking the wheels during landing, thus reducing the possibility of wheel skid.

tie /taɪ/ noun a basic structural member which is designed to withstand mainly tensile loads ○ Diagonal ties can be used to relieve tension and increase the effectiveness of the top boom.

tight /taɪt/ adjective closely or firmly fitting or put together ○ a tight fit a situation when there is just about enough space to fit closely or firmly, with no air leaks ○ The door must be shut tight.

tilt /tɪlt/ noun a sloping position ○ Land creates a drag effect on an electromagnetic wave-front, reducing the velocity of the wave thereby causing a tilt. ○ verb to be at an angle to the vertical or horizontal, to slope ○ The Earth tilts on its axis.

timetable /ˈtɪmətəb(ə)l/ noun a printed list which shows the times of departure from and arrival to various destinations ○ All the scheduled flights are listed in the airline timetable.

timetabled /ˈtɪmətəb(ə)ld/ adjective listed in a timetable ○ A scheduled landing is an arrival at a timetabled destination.

time zone /ˈtaim ˈzuːn/ noun one of the 24 parts of the Earth in which the same standard time is used

tip /tip/ noun the end of a small or tapering thing

tire /ˈtareɪ/ noun US same as tyre
titanium /ˈtaɪtəniəm/ noun a light metal used to make strong alloys. • The fatigue resistance of titanium is greater than that of aluminium or steel.

TKOF abbreviation take off (ICAO)

TMA abbreviation terminal control area

T/O, TO abbreviation take off
toggle /ˈtɒgl/ noun a short piece of wood or other material, attached with a string to e.g. a life jacket. • Pull the toggles downwards to inflate the life jacket.
toilet /ˈtoʊlɪt/ noun 1. a bowl with a seat on which you sit to get rid of waste from your body. 2. a room or cubicle with a toilet bowl in it. • There are two toilets at the rear of the plane and one at the front.
tolerance /ˈtɔlərəns/ noun an allowable variation in something which can be measured. • a tolerance of 2°. • a tolerance of 1mm (millimetre)
tone /ˈtoʊn/ noun a sound of one pitch. • The ground transmits a code in two short bursts each of which is modulated with two tones.
tool kit /ˈtʊlkɪt/ noun a set of tools consisting of spanners, screwdrivers, pliers, etc.
top /ˈtɒp/ noun the highest point or part. • If cumulonimbus clouds cannot be avoided then flight through the top is less hazardous than through the centre or bottom of the cloud.
top-dead-centre /ˈtɒp dɛd ˈsentər/ noun the position of the piston at the extreme top of its stroke in a piston engine. • Ignition should occur just before top-dead-centre.
topic /ˈtɒpɪk/ noun the subject of something heard, said, written or read. • The first section in the book deals with the topic of airmanship.
topographical /ˌtɒpəˈɡrɑːfɪk(ə)l/ adjective referring to topography. • An advantage of using airfield QNH is that altimeter readings can be compared directly with heights represented on topographical maps.
topography /ˈtɒpəɡrɑːfɪ/ noun 1. a representation of detailed natural and man-made features of the Earth’s surface as represented on a map. • The chart shows the topography of the area. 2. relative elevations of the Earth’s surface, or features of a geographical area. • The general circulation is complicated because the Earth tilts and its surface is neither level, because of topography, nor uniform due to areas of land and sea.
tornado /ˈtaʊnɔːd/ noun a violent storm of small extent, with rotating winds. • The winds of a tornado are of hurricane force.
torque /tɔrk/ noun a moment of forces causing rotation. • Torque forces try to bend the propeller against the direction of rotation. • High current flows through both the field and armature windings producing the high torque required for engine starting.
torquemeter /ˈtɔrkmeɪtər/ noun a device for measuring forces (torque) causing rotation. • Engine torque is used to indicate the power that is developed by a turboprop engine and the indicator is known as a torquemeter.
torsion /ˈtɔrʃən/ noun twisting, especially of one end of a body while the other is fixed. • Rivets are subjected to torsion and may break.
torsion load /ˈtɔrʃən ləʊd/ noun the load caused by twisting of a structure.
total /ˈtɔlt(ə)r/ adjective complete, whole. • Of the total amount of radiation emitted by the sun, the Earth receives only a very small part. • total system failure complete system failure. • total seating capacity the maximum number of passengers who can be accommodated on seats.
touchdown /ˈtʌtʃdəʊn/ verb to make controlled contact with the landing surface after a flight. • If the atmospheric pressure at an airfield is 1,000 millibars (mb) and that pressure is set on the sub-scale of an aircraft altimeter, when the aircraft touches down at the airfield, the altimeter will read zero.
touchdown /ˈtʌtʃdəʊn/ noun the moment, after a flight, when the aircraft makes controlled contact with the land-
ing surface  One of the aircraft’s tyres burst on touchdown.

touchdown point /tʌʃdʌm pɔnt/ noun the place on the runway where the aircraft undercarriage first touches the ground on landing
tow /tɔʊ/ verb to pull an aircraft or vehicle using a bar, rope, etc. attached to another aircraft or vehicle  The glider was towed into the air by a Roldax Condor.
tower /ˈtaʊə/ noun a tall airport or airfield air traffic control building  Wait for permission from the tower before crossing an active runway.

'T' piece adapter /ˈtʃiːpi: ædərəd/ noun a device for connecting two inputs to one output or vice versa
track /træk/ noun a projection on the Earth’s surface of the path of an aircraft, which can be expressed in degrees from north  Where an aircraft track and wind direction are the same, there will be a headwind component acting on the aircraft  The actual track does not necessarily follow the planned track and is given the name track made good.

verb to follow a line of the flight path of an aircraft, as projected on the Earth surface  On final approach, track the imaginary extended centre line of the runway.
tractor /ˈtraktr/ noun 1. an aircraft that has its propeller in front of its engine 2. a propeller in front of an aircraft engine, which has the effect of pulling the aircraft through the air

trade winds /ˈtreɪd wɪnts/ plural noun steady winds which blow on the side of the sub-tropical highs nearest to the equator  Trade winds maintain their direction over the oceanic areas, especially the Pacific, more than over land areas.
traffic /ˈtræfɪk/ noun the number of aircraft in operation  Standard instrument routes are structured to provide the safest and most efficient flow of traffic from entry and exit points to the airfield.

traffic pattern /ˈtræfɪk ˈpæt(ə)n/ noun 1. the shape marked out on the ground of an aircraft track in the aero-
drome circuit 2. the pattern of routes that an aircraft must keep to when approaching or circling an airport

trailing /ˈtreɪlɪŋ/ adjective referring to something which comes after something else  The trailing edge is positioned behind the main brush on the rotor arm, thereby giving a retarded spark.

trailing edge /ˈtreɪlɪŋ ˈedʒ/ noun after part of an aeroflot  The trailing edge of the wing is the section behind the rear spar and is of light construction because the aerodynamic loads on this area are relatively low.

train /treɪn/ verb to teach a person a particular skill  The student pilot is trained to scan an instrument panel, whilst at the same time listening to the aircraft radio and flying the aircraft.

noun a series of connected parts or wheels in machinery  The turboprop turbine transmits increased power forward through a shaft and a gear train, to drive the propeller.

trainee /ˈtreɪni/ noun a person who is being taught  a trainee pilot

transducer /ˌtrænsˈdʒʊər/ noun a device which converts a non-electrical signal into an electrical one  The manifold is connected into the electrical one  The manifold is connected into the electrical one

noun refers to an associated electrical circuit, providing signals to the servo indicator in the cockpit.

transfer /ˈtrænsfə/ the act of passing or moving to another place  External cooling of the engine is necessary to prevent the transfer of heat to the aircraft structure.

verb to transfer fuel from one tank to another tank. (NOTE: transferring – transferred)

transform /ˈtrænsfɔːm/ verb to change completely  The purpose of an actuator is to transform fluid flow into motion, i.e. it converts pressure energy into mechanical energy.

noun refers to friction results in some of the power available from a pump being transformed into heat.
transformer /ˌtrænsˈfɔːmə/ noun a device for changing the voltage or current amplitude of an alternating current signal. 1. Current transformers differ from voltage transformers in that the primary circuit consists of a supply feeder cable rather than a coil connected across a supply.

transient /trænˈzɪnt/ adjective passing or temporary, lasting only a short time. Transient loads can be absorbed by the busbar with a minimal voltage fluctuations.

transit /ˈtrænzɪt/ noun an act of moving in transit moving. A green light indicates the undercarriage is locked down, and a red light is displayed when the undercarriage is in transit. A transit route a route taken by one aircraft through controlled airspace.

transition /trænˈzɪʃ(ə)n/ noun an act of passing from one place, state or condition to another.

transition altitude /trænˈzɪʃ(ə)nˌæltɪtjuːd/ noun altitude in the vicinity of an airport, at or below which the vertical position of the aircraft is controlled by reference to altitudes above mean sea level. When a flight takes place above the transition altitude, the standard pressure setting of 1013.25 mb (millibars) is used.

transition layer /trænˈzɪʃ(ə)nˌleɪə/ noun the airspace between the transition altitude and the transition level (NOTE: The depth of this layer will normally be insignificant and will never exceed 500 ft.)

transition level /trænˈzɪʃ(ə)nˌleɪv(ə)n/ noun the lowest flight level above the transition altitude.

transit lounge /ˈtrænzɪt laʊndʒ/ noun a room where transit passengers wait for connecting flights.

transit passenger /ˌtrænzɪtˈpæsɪndʒə/ noun a traveller who is changing from one aircraft to another.

transmission /trænˈzɪʃ(ə)n/ noun 1. the sending of a radio signal. 2. The combination of loop and sense antennae can determine the direction from which a transmission is made. 2. a radio signal that is transmitted.

transmit /trænˈzɪmt/ verb 1. to pass, to convey. As the camshaft rotates, the cam will transmit a lifting force through rods and pivots to open the valve. 2. to send out a radio signal. Survival beacons transmit a signal which enables search aircraft to rapidly locate survivors in the water.

transmitter /trænˈzɪmtər/ noun a device for sending out radio signals. Although continuous wave radars operate continuously, separate transmitter and receiver antennae must be used. Signal strength is inversely proportional to the distance from the transmitter.

transparency /trænˈspærənsi/ noun the condition of being transparent. Meteorological visibility gives information on the transparency of the atmosphere to a stationary ground observer.

transparent /trænˈspærənt/ adjective allowing light to pass through so that things can be seen. Aircraft windows and canopies are usually made from transparent acrylic plastic.

transponder /trænˈspɔndər/ noun a device in an aircraft for receiving a radio signal and automatically transmitting a different signal so that an air traffic control station can identify the aircraft. The transponder in the aircraft comprises a transmitter and a receiver.

transposition /ˈtrænspɔzəʃ(ə)n/ noun a system for moving people, freight and baggage from one place to another. On a large
transport aircraft, the safety of hundreds of passengers is involved.

**transport aircraft** /ˈtrəŋspɔrt ʌrk faɪt/ noun an aircraft designed to carry ten or more passengers or the equivalent cargo and having a maximum take-off weight greater than 5,670 kg.

**trap** /træp/ verb to catch and prevent from escaping. If there is a failure of the pressurised air supply, the check valve will close and trap pressurised air in the cabin. ○ Smog is smoke or pollution trapped on the surface by an inversion of temperature with little or no wind.

**tread** /tred/ noun a series of patterns moulded into the surface of a tyre to provide grip. ○ The risk of aquaplaning increases as the depth of tyre tread is reduced.

**treat** /trɪt/ verb 1. to behave or act towards something or somebody in a particular way. ○ Pilots should treat the engine carefully, if they want to prolong its life. 2. to apply a process to something in order to get a particular result. ○ treated water water which has been made drinkable. ○ heat-treated alloys alloys which have undergone a process of hardening by using heat.

**treatment** /trɪtmənt/ noun subject to the action of a chemical or physical process. ○ anti-corrosion treatment ○ heat treatment

**trembler** /trembler/ noun an automatic vibrator for making and breaking an electrical circuit

**trend** /trend/ noun 1. a general direction or tendency. ○ Continuous VOLMET, which is normally broadcast on a designated VHF (very high frequency) channel, contains current aerodrome reports and trends where available. 2. an up-to-date or modern way of doing things. ○ Warning systems can take the form of lights, captions, and aural signals, and the modern trend is to incorporate them into a central warning system.

**triangle** /ˈtriːnggəl/ noun a plane figure with three sides and three angles. ○ The triangle of velocities is a vector solution of what happens to an aircraft when wind causes drift.

**trigger** /ˈtrɪgər/ verb to cause to operate, to set off. ○ Normally, both the captain’s and first officer’s airspeed indicator trigger an aural warning if the airspeed limits are exceeded.

**trijet** /trɪdʒet/ noun an aircraft powered by three jet engines

**trim** /trɪm/ noun a condition in which an aircraft is in static balance in pitch. ○ Trim indicators have a green band, to show when the trim is correct for take-off. (NOTE: Some aircraft have rudder and aileron trim.) ○ verb to adjust trimmers in order to get the required hands-off pitch attitude. ○ Trim the aircraft for level flight.

**trim wheel** /ˈtrɪm wɪl/, **trimmer** /ˈtrɪmər/ noun a wheel-shaped device, sometimes situated between the front seats of light aircraft, to trim the aircraft by hand. ○ The trimmer is used to ease the loads imposed on the flying controls during flight.

**trip** /trɪp/ verb to cause an electrical device to suddenly stop working. ○ Oscillating outputs from alternators could cause sensitive equipment to malfunction or trip.

**triplane** /ˈtrɪpleɪn/ noun an aircraft with three main wings fixed one above the other

**triple** /ˈtrɪpl/ adjective consisting of three parts. ○ Probes may be of single, double or triple element construction.

**tropical** /ˈtrɒpɪk(ə)r/ adjective referring to the area between the parallels of latitude 23° 26' north and south of the equator. ○ Tropical air moving northwards is subjected to surface cooling and becomes increasingly stable in its lower layers.

**tropical storm** /ˈtrɒpɪkl stɔrm/ noun a violent wind system which forms over tropical oceans. ○ Tropical storms often dissipate when they pass from sea to land.

**tropics** /ˈtrɒpɪks/ noun the tropics: the area between the parallels of latitude 23° 26' north and south of the equator. ○ Throughout the tropics and
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sub-tropics, the sea breeze is a regular feature.
tropopause /ˈtrɒpəpəs/ noun the level at which the troposphere and the stratosphere meet. The altitude and temperature of the tropopause are of concern to aircraft because they affect aircraft performance.
troposphere /ˌtrɒpəsfər/ noun the lowest region of the atmosphere. The troposphere is at its deepest near the equator and shallowest near the poles.
trough /trʌf/ noun a long area of low barometric pressure. Severe icing and turbulence can be experienced when flying through a trough and the precipitation may be of hail, rain, snow or sleet.
true /truː/ adjective referring to a calculation or reading which has been corrected for errors.
true airspeed /ˈtruː ˈɛəspɪd/ noun airspeed corrected for instrument and position error in addition to altitude, temperature and compressibility errors.
true altitude /ˈtruː ˈæltɪtjuːd/ noun real or actual height above sea level.
true bearing /ˈtruː ˈbɛərɪŋ/ noun bearing with reference to true north, not magnetic north.
true degrees /ˈtruː ˈdɪɡrɪz/ noun degrees of direction measured from true north, not magnetic north. Also called degrees true. Symbol ‘T’
true north /ˈtruː ˈnɔːθ/ noun the direction towards north pole along a meridian through the observer.
tube /tjuːb/ noun a long, hollow cylindrical device for holding or carrying fluids. A liquid-type fire detector consists of a tube and expansion chamber filled with liquid.
tubing /ˈtjuːbɪŋ/ noun tubes in general or hydraulic tubing.
tubular /ˈtjuːbjʊlər/ adjective referring to something which is shaped like a tube. Diagonal members can be of angle section, box spar or tubular in shape.
tune /tjuːn/ verb 1. to set a system at its optimum point by careful adjustment to the particular frequency of the required signal. The RBI shows the bearing of the tuned radio beacon with reference to the aircraft’s heading.
tuner /ˈtuːnər/ noun a part which allows the operator to select the particular frequency of the required signal. The tuner reduces interference.
turbine /ˈtɜːrbaɪn/ noun a rotary motor or engine formed of a wheel driven by a flow of air or gas.
turbo- /ˈtɜːrbəʊ/ prefix turbine.
turbocharger /ˈtɜːrbəʊˌkærɪdʒər/ noun a supercharger driven by a turbine powered by exhaust gases. The turbocharger significantly increases engine power.
turbofan /ˈtɜːrbəʊfæn/ noun a jet engine in which most of the thrust is produced by air, accelerated by a large fan, which does not pass through the combustion chamber of the engine. The Airbus A340 is powered by four CFM56 turbofans. (NOTE: The US term is fanjet.)

COMMENT: Turbofan engines are much quieter than older turbojets and make a characteristic sound when in operation. The fan can be clearly seen in the front part of the engine. Modern airliners use turbofan engines produced by major manufacturers such as Rolls Royce, CFM or Pratt and Whitney.
turbojet /ˈtɜːrbəʊdʒet/ noun a jet engine which includes a turbine-driven compressor for the air taken into the engine. The de Havilland Comet was the world’s first turbojet commercial transport aircraft.

COMMENT: In recent years turbofan engines have taken over from turbojet engines. Frank Whittle (1907–96) was an English engineer and RAF officer who invented the turbojet aircraft engine. Whittle developed a jet aircraft by 1941 and the first military jet aircraft, the Gloster Meteor, became operational in 1944.
turboprop /ˈtɜːrbəʊprɒp/ noun a turbojet engine in which the turbine also drives a propeller. The turboprop
engine is often used in transport aircraft.

COMMENT: Turboprop aircraft are efficient at lower speeds than turbojet aircraft and are often used for short-haul operations.

turboshaft /ˈtɜːboʊʃaft/ noun an engine similar to a turboprop engine, except that it is used primarily in helicopters

turbulence /ˈtɜːbləns/ noun an irregular motion of the atmosphere

turbulent /ˈtɜːblənt/ adjective referring to the irregular motion of the atmosphere

When flying in turbulent air conditions, an aircraft is subjected to upward and downward gust loads.

turn /tɜːrn/ noun 1. an angular change in track 2. a 180° turn 3. to make an angular change in track 4. to find a page, section, passage, etc., in a book

As it descends into warmer air, snow turns into rain.

4. to turn is for its or their part

Drag must be overcome with thrust, which requires engines, which in turn consume fuel.

1. to turn off 2. to stop the flow of something by using a valve

Turn the knob rotate the knob or control

turn (in)to to change state

turn (out) to stop the flow of something

turn on /ˈtɜːn ˈɒn/ verb 1. to switch an electrical device or system 'on' 2. Can you turn the light on or turn on the light?

Turn on the fuel.

turnaround /ˈtɜːnəraʊnd/ noun unloading, loading and preparing an aircraft for another flight and the time taken to do this (NOTE: The word turnaround is preferred in US English.)

twin engine aircraft /ˈtɪn ˈendʒɪn ˈtɪknɪkəflɪt, ˈtɪknɪnˌendʒɪn ˈtɪknɪkəflɪt/ noun an aircraft with two identical engines

twist /twɪst/ verb to turn against resistance

type /taɪp/ noun 1. a sort or kind 2. Temperature and oil pressure are critical to any type of system.

A class of things having shared characteristics

The type of undercarriage fitted to an aircraft is governed by the operating weight.

A type of aircraft or aircraft type all aircraft of the same basic design

type certificate /ˈtaɪp ˈsərɪfɪkət/ a document issued by an aviation authority which indicates that the design of a certain aircraft, engine etc has been approved

type certificate data sheet noun a document associated with a type certificate, giving information about why the certificate has been granted and general information about the design which has been approved

Abbreviation TCDS

type rating /ˈtaɪp ˈreɪtɪŋ/ noun authorisation, usually entered on a licence, which allows the pilot to fly a particular aircraft type

typical /ˈtɪpk(ə)l/ adjective 1. normal, standard 2. a typical fuel system a standard type of fuel system 3. representative of a particular class of things

The Piper Archer is a typical single-engine light aircraft.

tyre /ˈtaɪər/ noun a rubber covering for a wheel (NOTE: The US spelling is tire.)
tyre creep /ˈtaɪr krip/ noun the gradual rotation of the tyre in relation to the wheel, caused by landing to convert magnetic bearing into true bearing it is necessary to apply magnetic variation at the point at which the bearing was taken

COMMENT: Tyre creep can lead to damage to the tyre valve and subsequent unwanted and possibly dangerous deflation of the tyre.

tyre pressure /ˈtaɪər ˈpreʃə/ noun the air pressure in a tyre • maximum allowable tyre pressure
UAR abbreviation upper air route
UAS abbreviation upper air space
UHF abbreviation ultra high frequency
UIR abbreviation upper air region
UK abbreviation United Kingdom
ultimate /'ʌltɪmeɪt/ adjective final, from which no further advance can be made. To determine the ultimate load which a structure must be capable of withstanding, a multiplier, called the ultimate factor of safety is used. The ultimate responsibility for safety rests with the crew.
ultra- /'ʌltrə/ prefix beyond
ultra high frequency /'ʌltrə hæt'frɪkwaʊnsi/, ultra high frequency band /'ʌltrə hæt'frɪkwaʊnsi, bænd/ noun a radio frequency range between 300 MHz and 3000 MHz. Abbreviation UHF
ultralight /'ʌltrəlait/ noun a small single-seat or two-seat aircraft constructed of light materials and powered by a small motor, flown mainly for recreation
ultrasonic /'ʌltrə'snɒnik/ adjective referring to frequencies in the range of 20,000 Hz which cannot be heard by the human ear
ultrasonic inspection /'ʌltrə'snɒnik ɪn'spektʃ(ə)n/ noun a non-destructive inspection of materials using extremely high frequency vibrations. Also called ultrasonic detection
ultraviolet /'ʌltrə'veɪrələt/ adjective referring to or occurring in the invisible part of the light spectrum beyond violet. Abbreviation UV = ultraviolet radiation
unaccompanied /ˌʌnə'kæmpənɪd/ adjective baggage that travels on a different flight from the passenger who owns it. Accompanied
uncontrolled airspace /ˌʌnkontroʊld ˈɛəspɛs/ noun airspace in which air traffic control does not provide a service and in which an ATC clearance is not required to fly. While first learning to handle an aircraft, student pilots fly in uncontrolled airspace. (NOTE: Pilots must still follow certain rules when flying through uncontrolled airspace.)
uncoordinated flight noun flight, especially during turns, in which the horizontal and vertical forces acting on the aircraft are out of balance. This can result in the aircraft going into a slip or a skid.
undercarriage /ˌʌndəkərɪdʒ/ noun the landing gear of an aircraft. To reduce the effect of drag by fixed undercarriages a retractable type of undercarriage was introduced. (NOTE: The undercarriage is often called the landing gear or simply gear.)
COMMENT: The main landing gear are nearest the aircraft's centre of gravity. Main landing gear are designed to withstand a greater landing shock than the nose wheel or tail wheel and consequently should make contact with the surface first when landing.
undercarriage assembly /ˌʌndəkərɪdʒ ə'sembli/ noun wheels, struts and linkages which make up the complete unit
undergo /ˈʌndərɡəʊ/ verb to experience, to pass through a process. When water changes from vapour to liquid, energy is released into the atmosphere which is thus warmed, although the water itself does not undergo a change of temperature. (Note: undergoing – underwent – has undergone)

underlying /ˈʌndərˈlɪŋ/ adjective 1. being under. Thermal modifications occur when the temperature of the underlying surface differs from that of the source region. 2. forming the basis of a theory or principle. The principle underlying the construction of a mercury barometer has not changed since 1643, when Torricelli first demonstrated that the atmosphere has weight.

undershoot /ˈʌndərʃɔt/ verb to land before, or in front of the intended target. Because of the strong wind, the student pilot undershot the runway and landed before the runway threshold.

underside /ˈʌndərˌsайд/ noun the surface underneath something. The underside of the wing should be carefully inspected for damage or leaks.

undertake /ˈʌndərtˈeɪk/ verb to do. In light aircraft, pilot/passenger communication can be satisfactorily undertaken verbally on a one to one basis. (Note: undertaking – undertook – has undertaken)

undulating /ˈʌndjuːlətɪŋ/ adjective rising and falling in gentle slopes. Flight over undulating terrain will result in changing indications of aircraft height on the indicator of the radio altimeter.

uniform /ˈjuːnɪfɔːm/ adjective the same, not varying in quality, dimensions, etc. An engine should be run at low r.p.m. (revolutions per minute) after flight to allow engine components to cool to a uniform temperature.

unique /juːˈniːk/ adjective the one and only of its sort, having no like or equal. The pulse coded message contains a unique 4-number identification.

unit /ˈjuːnɪt/ noun 1. a quantity or amount used as a standard, an accepted measurement. The internationally agreed unit of pressure is the millibar. The higher the sun is in the sky, the more intense is the radiation per unit area. 2. a person, group or device, complete in itself. The operation of flying controls is by means of self-contained power flying control units (PFCUs).

universal /juːˈnɪvɜːs(ə)l/ adjective affecting all or everybody. The use of fly-by-wire systems in airliners was delayed to allow thorough development and encourage universal acceptance of the new technology. Coordinated Universal Time

unload /ˈʌnˈləʊd/ verb to remove a load from an aircraft. It took three hours to unload the aircraft.

unloading point /ˈʌnˈləʊdnɪŋ ˈpɔɪnt/ noun the place where an aircraft is unloaded. After taxing, a marshall marshals the aircraft to the disembarkation and unloading point.

unsaturated /ʌnˈsætərɪt/ adjective. Unsaturated air air that does not contain the maximum amount of water vapour for its temperature.

unserviceable /ʌnˈsɜːvɪsəbl/ adjective not operative. The aircraft cannot be flown because the radio is unserviceable. (Note: It is often abbreviated in spoken English as U (you) S (uss).)

unstick /ʌnˈstɪk/ (informal) verb to cause an aircraft to take off, or take off in an aircraft. noun a take-off in an aircraft.

update /ˈʌpˌdɛt/ verb to bring up to date, to add the latest information to something. Forecasts are updated and reissued every four hours.

updraft /ˈʌpdrɔːft/ noun US same as updraught.

updraught /ˈʌpdrɔːft/ noun a rising current of air. In cumulonimbus clouds, there are updraughts of tremendous force. Opposite downdraught.

uplift /ˈʌplɪft/ noun the lifting of air by surface features. Thunderstorms are
triggered off by convection and/or orographic uplift.

**upper** /ˈʌpər/ adjective 1. at high altitude 2. Upper air, Upper winds
- In modern meteorological practice, upper air analysis and the construction of contour charts is carried out by computer. Opposite **lower**
- The upper surface of the wing; the surface of the wing facing upwards, as opposed to the underside.

**Upper air chart** /ˌʌpər ˈɛər ˈkɑːrt/ noun a chart showing airflow pattern and distribution of temperatures at specific altitudes above about 10,000 feet.

**Upper air route** /ˌʌpər ˈɛər ˈrʌt/ noun a route above FL245, approximately 24,500 ft. Abbreviation UAR

**Upper airspace** /ˌʌpər ˈɛəspeɪs/ noun the airspace above FL245, approximately 24,500 ft. Abbreviation UAS

**Upper information region** noun airspace which covers the same geographical area as a flight information region but above 24,500 ft. Abbreviation UIR

**Upward** /ʌpˈwɔːd/ adjective moving or directed up 1. As the aircraft accelerates down the runway, the forces on the wing tips and wing surfaces start reversing direction and instead of being only downward forces of weight, they become upward forces of lift. (Note: In US English, **upward** is used as an adjective and as an adverb.)

**Upwards** /ʌpˈwaːdz/ adverb towards the top 1. Heat is transferred from the Earth’s surface upwards by convection. Opposite **downwards**

**Upwind** /ʌpˈwɪnd/ adverb against the wind 1. The glider was released from the aero-tow 3 miles upwind of the airfield. Opposite **downwind**

**Urgency** /ˈɜrdʒənsi/ noun importance or need for prompt or fast action 1. Warnings, cautions and advisory messages are displayed only when necessary and are colour coded to communicate the urgency of the fault to the flight crew.

**USA, US** abbreviation United States of America

**Usable** /ˈjuːzəbl/ adjective capable of being used 1. On receiving the evacuate order, cabin crew must assess if their exits are usable.

**Usage** /ˈjuːzɪdʒ/ noun the act of using something, consumption 1. Fuel flight planning combines navigation data with fuel usage.

**Use** /juːs/ noun the act of using something, or the state of being used 1. It must be ensured that smoke masks are available for use by employees within the aircraft. **Runway in use** verb to put something to work for a purpose 1. Gas turbine engines use low viscosity synthetic oil.

**UTC** abbreviation Coordinated Universal Time

**Utilisation** /ˌjuːtɪlɪˈzeɪʃən/ noun the act of making use of 1. Integral tanks are now favoured for aircraft owing to the high utilisation of space and reduction in weight.

**Utilise** /juːtɪlaɪz/ verb to make use of 1. The most common type of barograph is one which utilises an aneroid capsule mechanically connected to a pen.

**UV** abbreviation ultraviolet
vacuum /ˈvækjʊm/ noun a space completely empty of everything including air. If the fuel tank vent pipe is blocked, a vacuum will form in the tank and fuel flow to the engine will be restricted.

valid /ˈvælɪd/ adjective 1. having official force or effect. All passengers should have valid passports. 2. worth taking seriously, acceptable because it is true or well-based. Significant weather charts use abbreviations and symbols to illustrate en route weather phenomena and are valid for a specified time. A valid assumption is a well-based supposition.

validity /ˈvælɪdəti/ noun the state of being valid. The validity of a visa. Aerodrome forecasts included in VOLMET should have a validity period of 9 hours.

valley /ˈvæli/ noun an area of low-lying land between mountains or hills. An example of a valley wind is the Mistral.

value /ˈvælju/ noun 1. a quantity shown as a number. Deviation is not a constant value but varies from one aircraft to another. 2. the quality of being useful or desirable. The value of doing something is the usefulness or worth of doing something.

valve /ˈvælv/ noun a mechanical device for controlling the flow of a fluid.

valve overlap /ˈvælv əˈvɔləp/ noun the period when both the exhaust and inlet valves are open together, with the exhaust valve closing and the inlet valve opening.

valve seat /ˈvælv sɪt/ noun an angled ring in the cylinder head on which the poppet valve sits when closed.

vaporise /ˈveɪpəraɪz, ˌvæpəraɪz/ vaporize verb to turn into vapour. Water vaporises when heated.

vapour /ˈveɪpər/ noun US same as vapour.

variable /ˈveəriəb(ə)l/ adjective changing or changeable. Winds are more variable in the northern hemisphere than in the southern hemisphere.

variable geometry /ˈveəriəb(ə)l dʒɪərəˈmɛtri/ noun technology which allows the angle between wing and fuselage to be altered to give a more or less swept wing for better high-speed and low-speed flight characteristics.

valve seat
flight (note: the wings are swept back to give low drag in supersonic flight and are moved forwards for takeoff and landing.)

variable pitch propeller /ˈveəriəbl/ prəˈpɛlə/ noun a propeller with a mechanism to change the blade angle, to suit flight conditions

variable sweep /ˈveəriəbl/ ˈswɪp/ adjective same as variable geometry

variation /ˈveəriˈeʃən/ noun 1. a change or the amount of a change 2. the angular difference between magnetic north and true north, which is measured in degrees and is named east or west according to whether the north-seeking end of a freely suspended magnet lies to the east or to the west of the true meridian at that point, variation east, magnetic best a mnemonic to help somebody remember whether to add or subtract variation

variety /ˈvaːrɪətɪ/ noun a lot of different things 1. Display units provide a wide variety of information relevant to engine and other automated systems operation.

variometer /ˈveəriəmətər/ noun an instrument used for measuring the rate of climb of an aircraft such as a glider

vary /ˈveəri/ verb to change, to be different 1. The tropopause over the UK can vary between 25,000 feet and 45,000 feet according to whether the country is covered by a polar or tropical air mass.

VASI abbreviation visual approach slope indicator

vast /ˈvæst/ adjective large, immense, huge 1. the vast majority most 2. the vast majority of people

VCR abbreviation visual control room

VDF abbreviation very high frequency direction-finding

vector /ˈvektər/ noun 1. a quantity with magnitude and direction indicated by a line of a given length, representing magnitude and specific direction 2. the triangle of velocities is a vector solution of what happens to an aircraft when wind causes drift.

venturi /ˈvɛntʃʊri/, venturi tube noun a tube which narrows at the centre, a choke tube 1. When the temperature of the air passing through the carburettor is reduced below 0°C (Celsius), any moisture in the air forms
very high frequency omnidirectional radio range /ˌveri hæˈfrɪkwənsi,ˌɒmnɪdeɪˈrɛkʃən(ə)l ˈreɪdiər,ˈreɪdɪər/ noun full form of VOR
vessel /ˈves(ə)l/ noun a boat or ship • When flying over the sea you must not fly closer than 500 feet to a vessel.
VFR abbreviation visual flight rules
VHF abbreviation very high frequency
violation /ˌvɪələˈkeɪʃən/ noun an act or instance of establishing the truth or validity of something • The document required verification.
vibrate /ˈvɜːbrɪt/ verb to move rapidly and continuously backwards and forwards • Turbine blades in the average jet engine vibrate at frequencies of 1 million per minute.
vibration /ˌvɜːbrəˈkeɪʃən/ noun a rapid and continuous movement • According to the pilot, engine vibration was detected in engine number one.
vice versa /ˌvɪsəsə/ adjective the other way around • when engine demand is high, fuel pressure tends to be low and vice versa when the engine demand is low, fuel pressure tends to be high
vicinity /ˈvɪsənti/ noun the area nearby • After an emergency evacuation, passengers should be directed to move away from the vicinity of the aircraft quickly. • in the vicinity of the airport near the airport
view /vjuː/ noun 1. what you are able to see from a particular place • Cabinet crew must have a clear view of the aisles from their stations. 2. a picture of something presented in a particular way • a cross-sectional view of an aerofoil 3. a personal opinion • He expressed strong views on the subject of airport security. 4. • with a view to with the intention of • She wrote the report with a view to improving in-flight services. • in view of because of • In view of the poor weather conditions, the flight will be delayed.
violate /ˈvaɪəleɪt/ verb 1. to enter without permission • The aircraft violated a danger area. 2. to break rules or
regulations. By not wearing a cap, the cadet is violating the dress code.

violent /ˈvɜːlənt/ adjective with great force. Flying through atmospheric dust causes the airframe to build up a static electrical charge and the associated discharges can be violent.

VIP abbreviation very important person

virtually /ˈvɜːtjuːl/ adverb almost. Resistance to alternating current remains virtually constant and is independent of frequency.

viscosity /ˈvɪskɒsɪtɪ/ noun a liquid’s internal resistance to flowing. Excessive oil temperatures are dangerous, as the oil viscosity is reduced and inadequate bearing lubrication results.

visibility /ˈvɪzɪbɪlɪtɪ/ noun the ability to see unlighted objects by day and lighted objects by night, subject to atmospheric conditions. Measurement of visibility by day is made by direct observation of objects at known distances and is therefore an estimated value. Poor visibility a situation in which things cannot be seen clearly, e.g. because of fog, mist or smoke

visibility-by-day /ˈvɪzɪbɪlɪtɪ bɛt ˈdɛɪvɛljuːz/ noun values which indicate how easily seen an object is in a horizontal line from an observer in daylight conditions

visible /ˈvɪzəbl/ adjective that can be seen. When the undercarriage is selected down it may be visible from the crew compartment, but it is not usually possible to tell if it is securely locked. If the sun is seen through cumulus cloud it will be clearly visible.

vision /ˈvɪz(ə)n/ noun 1. the power of seeing. The ability to see. Lightning at night may cause temporary loss of vision. 2. What you are able to see. In low wing aircraft, downward vision may be limited by the airframe.

visual /ˈvɪʒuəl/ adjective referring to seeing. The instrument landing system is to provide guidance in the horizontal and vertical planes to an aircraft on final approach into a position from which a safe visual landing can be made.

visual approach slope indicator /,vɪʒuəl əˈprɑːʃeɪp ˈsləʊp ˌɪndɪkətər/ noun an arrangement of red and white lights on each side of the runway touchdown point to give the pilot information about the plane’s height on final approach. Abbreviation VASI

visual control room /ˈvɪʒuəl ˈkəntrəl ruːm/ the control room in the tower at an airport. Abbreviation VCR.

visual examination /ˈvɪʒuəl ɪɡˈzaːmɪnɪʃn/ noun a close observation or inspection with the eyes. Also called visual inspection

visual flight rules /ˈvɪʒuəl ˈflaɪt ruːlz/ plural noun rules set down by an authority for flight in visual conditions, regarding such things as flight visibility and distance from cloud. Abbreviation VFR. Special VFR flight

COMMENT: Particular requirements for VFR depend on the type of airspace, time of day, and height above terrain.

visual indication /ˈvɪʒuəl ɪnˈdɪkəʃn/ noun something which is seen and which suggests a more serious cause, e.g. a warning lamp. Distorted wing panels are often a visual indication of structural damage to the airframe.

visual meteorological conditions /ˌvɪʒuəl ˌmɪtərəˈlɒdʒɪk(ə)l ˈkɑntrəl ˈrɪdʒə/ noun meteorological conditions criteria /ˌɛdʒɪˈkrɪsɪə/ plural noun the factors which define the limits of flying in visual meteorological conditions. Abbreviation VMC.

visual warning /ˈvɪʒuəl ˈwɔːrnɪŋ/ noun a warning that can be seen as opposed to a audible warning that can be heard

vital /ˈvɪt(ə)l/ adjective extremely important. Verbal commands from the crew are vital at all times but particularly so if smoke restricts cabin visibility. Accurate measurements of atmospheric pressure and the rate of change of pressure are of vital interest to the meteorological forecaster.

viz /vɪz/ adverb namely, in other words, that is to say. There are two types of inverter, viz rotary and static.

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**VMC**

**VMC** _abbreviation_ visual meteorological conditions

**Vne** _abbreviation_ never-exceed speed

**volatile** _/vɒlistaɪl/ adjective_ describes a liquid which easily changes into a gas or vapour. 1. To aid starting in cold weather, more volatile fuels can be used

**volatility** _/vɒlətɪlɪtɪ/ noun_ the ease with which a liquid changes into a gas or vapour. 2. With kerosene-type fuels, the volatility is controlled by distillation and flash point, but with the wide-cut fuels it is controlled by distillation and the Reid Vapour Pressure test.

**VOLMET** _/vɒlmɪt/ noun_ a routine ground-to-air broadcast of meteorological information. The meteorological Operational Telecommunications Network Europe (MOTNE) is provided for the exchange of meteorological information needed by meteorological offices, VOLMET broadcasting stations, air traffic service units, operators and other aeronautical users.

**volplane** _/vɒlpleɪn/ noun_ a glide towards the ground in an aircraft with the engine turned off

**volt** _/vɔlt/ noun_ the SI unit of electrical potential. The system requires a power supply of either 115 volts AC (alternating current), 28 volts DC (direct current), or both. Abbreviation V

**voltage** _/vɒltdʒ/ noun_ electrical force measured in volts. As an installed battery becomes fully charged by the aircraft generator, the battery voltage nears its nominal level and the charging current decreases.

**volume** _/vɒljuːm/ noun_ 1. the amount of space occupied by a solid. a liquid or a gas. 2. If the pressure of a given mass of gas is maintained constant, the volume of gas increases as its temperature is increased. 2. the loudness of a transmission.

**volume control** _/vɒljuːm kəntrəʊl/ noun_ a knob used to adjust the sound by making it louder or less loud

**VOR** _noun_ a navigational aid based on the ground, to help the pilot establish the bearings of the aircraft. Full form very high frequency omni-directional radio range

**VOR bearing** _/vɔr bɛərɪŋ/ noun_ the direction of the VOR transmitter relative to the aircraft measured in degrees

**VORTAC** _/vɔrtæk/ noun_ a system that combines VOR and Tacan

**VSI** _abbreviation_ vertical speed indicator

**V/STOL** _/vɪstɒl/ noun_ 1. a system used by some aircraft that allows them to take off and land vertically or on a short runway. 2. an aircraft that is able to take off and land vertically or on a short runway. Full form vertical and short takeoff and landing

**VTOL** _/vɪtəʊl/ noun_ 1. a system used by some aircraft that allows them to take off and land vertically. 2. an aircraft that is able to take off and land vertically. Full form vertical takeoff and landing

**vulnerable** _/vəlnərəbl/ adjective_ unprotected and liable to attack or damage. Some engines still retain the centrifugal type of compressor because it is simple, comparatively cheap to manufacture, robust in construction and less vulnerable to damage.
W abbreviation west
WAAS noun a US navigation system which processes and improves data from GPS satellites to provide location information. Full form Wide Area Augmentation System (NOTE: The European equivalent is EGNOS.)
wake turbulence /wekt/ noun the disturbance of the air remaining after the passage of an aircraft
wall /wɔ/ noun the side. There is a film of oil between the piston and cylinder wall.
warm front /,wɔrm/ noun an advancing mass of warm air moving over a mass of cooler air
warn /wɔrn/ verb to give notice of possible danger. A light illuminates to warn the crew.
‘…ultrasonic technology which automatically warns pilots of ice build-up on aircraft may soon be approved for general use by carriers’ [Flight International 16–22 July 1997]
warning /wɔrning/ noun notice of possible danger • adjective giving notice of possible danger. The main power plant fire detection system should contain an audible warning device to supplement the visual indication.
warning indicator /,wɔrniŋ ,ɪndɪkətər/ noun an indicator which gives notice of a possible problem which may require some action. VASI
warning light /,wɔrniŋ lɑt/ noun a small light, often red, which informs of a possible danger by lighting up at 5 knots above stalling speed, a warning light on the instrument panel will flash.
washroom /ˈwɔʃrʊm/ noun same as toilet
waste /weist/ noun something which can no longer be used. A smouldering fire in a toilet waste container or waste disposal bin could become very active due to pressure changes during descent.
water-tight /ˈwɔtə tɑt/ adjective that does not leak water or other fluid
watt /wɔt/ noun the SI unit of measurement of electrical power. The work done by an electrical circuit or the power consumed is measured in watts.
wave /wev/ noun 1. the motion by which heat, light, sound or electric current is spread. The speed of propagation of radio waves is faster over sea than over land. 2. a mass of water moving across the surface of a lake or the sea, rising higher than the surrounding water as it moves. Wind speeds increase with height, the speed of the wind at the crest of a wave being the greatest.
waveform /ˈwevfrɔm/ noun the shape of a repetitive wave. A cycle is one complete sequence of the waveform, from any point, to the same value 360° later.
wavelength /ˈwevlɛŋθ/ noun the distance from the highest point of one wave to the highest point of the next. Short wavelength permits sharper beams for direction finding and more efficient reflections.
waveoff /ˈwevəf/ noun a signal or instruction to an aircraft that it should not land.
waypoint 250

waypoint /ˈweɪpɔɪnt/ noun a predetermined position on a route, used for monitoring flight progress or for navigating around controlled airspace. Abbreviation WP

weak /wɛk/ adjective 1. not strong  a weak radio signal 2. overdiluted with water or air  a weak mixture a fuel/air mixture in which there is more air than usual  Excessive cylinder head temperatures could be caused by prolonged use of a weak mixture, especially at high altitude.  a weak solution a mixture of water and some other substance in which the amount of water is more than usual

weaken /ˈweɪkən/ verb to make weak  Inflation of the de-icer boot weakens the bond between the ice and de-icer boot surfaces.

wear /weər/ noun damage or loss of quality by use  Mishandling of aero-engines during operation can cause considerable damage and wear which can shorten the life of the engine.  a verb 1. to become damaged or to lose quality because of use  The more the brakes are used, the more they wear. 2. to have on the body  The nature of modern jet transport does not require the pilot to wear an oxygen mask.

weather /ˈweðər/ noun the conditions of atmospheric temperature, pressure, wind, moisture, cloudiness, precipitation and visibility  Generally speaking, weather conditions can be described as light, moderate or severe depending on the intensity of the conditions.  a forecast weather predicted weather, not actual weather

weathercock /ˈweðərkɒk/ verb to tend to turn in the direction of the wind

weather report /ˈweðər rɪˈpɔrt/ noun an official account of weather conditions

web /web/ noun the main vertical member of a beam  a The web connecting the upper and lower flanges of the beams must be rigid enough to withstand direct compressive loads without buckling.

weigh /wei/ verb to measure how heavy something is  A given quantity of lead weighs more than the same quantity of aluminium.

weight /weɪt/ noun the force with which a body is drawn towards the centre of the Earth  Carry-on baggage is limited by regulations as to size and weight and items in excess of this should be stowed in the hold.

west /west/ noun 1. a compass point on the mariner’s compass 270° clockwise from due north and directly opposite east  a In Europe, snow occurs more frequently in the east than in the west. 2. the direction of the setting sun  a adjective referring to areas or regions lying in the west 2. the western part of a country  West Africa  a adverb towards the west  The aircraft was flying west.

westbound /ˈwestbəʊnd/ adjective travelling towards the west  a westbound flight

westerly /ˈwestəli/ adjective 1. situated towards the west 2. blowing or coming from the west  A westerly wind is blowing. 3. moving to the west or towards the west  He should fly in a westerly direction.  a noun a wind which blows or comes from the west  Temperate westerlies occur on the side of the sub-tropical anti-cyclonic belts which is remote from the equator.

western /ˈwestən/ adjective situated in the west  a Western Europe

westward /ˈwestwərd/ adjective going towards the west  a adv verb US same as westwards

westwards /ˈwestwərdz/ adv verb towards the west  a Flying eastwards or westwards for long periods of time affects sleep patterns.

west wind /ˈwest wɪnd/ noun a wind blowing from or coming from the west  (NOTE: A wind is named after the direction it comes from.)

wheel /wiːl/ noun a circular, rotating, load-carrying part between the tyre and axle, or the whole wheel and tyre assembly on which a vehicle rolls

wheel bay /ˈwiːl beɪ/ noun a space in the fuselage or wing structure in which the wheel is housed after retraction  a To avoid damage to the wheel bay, the nose
wheel must be aligned in a fore and aft direction during retraction.

wheel bearing /'wiːl bɪ'ɛərɪŋ/ noun a device which allows the wheel to rotate freely around the axle.

wheel fairing /'wiːl fɛərɪŋ/ noun same as spat

wheels up /'wiːlz ʌp/ adjective airborne after having taken off from a runway

whereas /'weərəz/ conjunction but in contrast, on the other hand. "In the piston engine, the cycle is intermittent, whereas in the gas turbine, each process is continuous." Kerosene has a low vapour pressure and boils only at very high altitudes or high temperatures, whereas a wide-cut fuel will boil at a much lower altitude.

whereby /'weərə'baɪ/ adverb according to which. "Compression heating relies on the principle whereby the air temperature is increased by compression." In ram air supply systems, the cooling method is of the simplest type, whereby the cold air can be directly admitted to the cabin via adjustable louvres.

whereupon /'weərə'prəʊn/ adverb at that point, or after which. "Pitch changes are achieved using the throttle lever, which is usually taken up and back through a gate in the quadrant whereupon fuel is added to increase power."

wherever /'weərə'ver/ adverb wherever possible in places where it is possible. "wherever possible, thunderstorms should be avoided by a wide margin."

while /'wail/ conjunction 1. during the time that. "The pilot is trained to scan an instrument panel, while at the same time listening to the aircraft radio and flying the aircraft." 2. in spite of the fact that. "While metal fatigue is not a modern phenomenon, it is only in recent years that much emphasis has been placed upon determining its causes. (Note: Whilst is sometimes used in place of while.)"

whipstall /'wɪpstaːl/ noun a manoeuvre in a small aircraft in which it goes into a vertical climb, pauses briefly, and then drops towards the earth, front first.

whole /hɔʊl/ adjective complete. "The whole aircraft should be inspected to ensure that it is free from deposits of ice, snow and frost." whole number an undivided number, a number which is not a fraction.

wide /wɔːd/ adjective 1. referring to the distance of something measured from side to side. "The localiser antenna array is normally about 80 feet wide and 12 feet high."

wide area augmentation system noun full form of WAAS

wide-bodied /'wɔːd bɔdɪd/ adjective US same as wide-body

widebody /'wɔːdbɒdɪ/ noun a jet aircraft with a body wide enough to accommodate three rows of seats across the width of the plane, with spaces on each side of the middle set.

wide-body /'wɔːd bɔdɪ/ adjective referring to a jet aircraft with a body wide enough to have three sets of passenger seats in a row across the width of the plane, with spaces on each side of the middle set.

wide-cut fuel /'wɔːd kʌt fjuːl/ noun a general term for aviation turbine fuels made up of a wider variety of petroleum products than kerosene-type fuels. "Kerosene has a low vapour pressure and boils only at very high altitudes or high temperatures, whereas a wide-cut fuel will boil at a much lower altitude."

widespread /'wɔːdspred/ adjective found or distributed across a large area. "The storm caused widespread damage." widespread precipitation rain falling or snowfall covering a large area.

width /wɜːt/ noun the distance of something measured from side to side, compared to length. "The polar front jet..."
wind 

stream may have a width of up to 200 nm (nautical miles). \( \text{wide} \)

wind \( /\text{wind} / \) noun horizontal movement of air in relation to the Earth’s surface.

wind \( /\text{wind} / \) verb to move in a curving or twisting manner. \( \text{NOTE: winding = wound} \)

windblast \( /\text{windblast} / \) noun the harmful effect of air flow on a pilot who has ejected from an aircraft travelling at high speed.

wind cone \( /\text{wind kon} / \) noun same as windsock.

wind currents \( /\text{wind kərənts} / \) plural noun the movement of air in a particular direction through a mass of air which is not moving so much.

wind direction \( /\text{wind da ʃərəŋ} / \) noun a description of where the wind is blowing from, given as north, south, east, west, etc., or a number of degrees, e.g. a wind coming from the west would be a wind direction of 270°.

wind direction and speed only affect the movement of the aircraft over the ground.

wind gradient \( /\text{wind ɡrədiənt} / \) noun the rate of increase of wind strength with unit increase in height above ground level. \( \text{NOTE: after take-off, as the aircraft gains altitude, the ground speed may be affected by the wind gradient.} \)

winding \( /\text{winding} / \) noun a series of 360° turns of wire. \( \text{NOTE: the voltage in each winding is directly proportional to the number of turns in each winding.} \)

windmill \( /\text{windməl} / \) verb to turn round by wind force only without engine power.

windscreen \( /\text{wind skrɛn} / \) noun the front window of an aircraft through which the pilot has forward vision. \( \text{NOTE: the windscreen is a glass laminated construction with an electrical element, made of gold film, sandwiched between the layers of a pole at a distance of hills upwind of the range of hills.} \)

windshear \( /\text{windsʃər} / \) noun a change in wind direction and speed between slightly different altitudes. \( \text{NOTE: windshear, if strong enough, can produce clear air turbulence.} \)

windshield \( /\text{windʃild} / \) noun US same as windscreen.

windsock \( /\text{wind skɔk} / \) noun a pole at the top of which is a fabric tube through which the wind blows, showing the wind direction.

windspeed \( /\text{windspeed} / \) noun the speed of the wind which, if combined with a direction, is called velocity. It is usually measured in knots. \( \text{NOTE: wind direction is given in degrees true rounded to the nearest 10°, followed by the mean windspeed.} \)

wind tunnel \( /\text{wind tjuːnəl} / \) noun a tunnel-shaped chamber through which air can be passed at a known speed in order to test the aerodynamic properties of an object such as an aircraft placed inside it.

wind velocity \( /\text{wind ˈvɛləsətɪ} / \) noun wind speed and direction.

windward \( /\text{windwərd} / \) adjective, adverb facing the direction from which the wind blows. \( \text{NOTE: lee = windward of a range of hills upwind of the range of hills.} \)

wing \( /\text{wɪŋ} / \) noun the main horizontal aerfoil or mainplane. \( \text{NOTE: the wing supports the weight of the aircraft in flight.} \)

winglet \( /\text{wɪŋlɛt} / \) noun an upturned wing tip or small additional vertical aerfoil on a wing tip. \( \text{NOTE: the attachment of winglets improved the handling characteristics of the aeroplane.} \)

wing loading \( /\text{wɪŋ ləʊdɪŋ} / \) noun the weight of an aircraft per unit wing area.

wingman \( /\text{wɪŋmən} / \) noun a pilot who flies in a position behind and to the side of the leader of a group of flying aircraft.

wingover \( /\text{wɪŋəʊvər} / \) noun a manoeuvre to turn a flying aircraft in which the pilot puts the aircraft into a
steep turning climb until it almost stalls and then allows the nose to fall

**wing panel** /ˈwɪŋ ,pən/ noun a rectangular aluminium section of the aircraft skin of a wing ○ Wing panels of light aircraft are normally riveted together.

**wing root** /ˈwɪŋ rt/ noun the part of the wing where it meets with the fuselage.

**wing tip** /ˈwɪŋ tip/ noun the outermost part of the wing ○ As an aircraft takes off, the forces on the wing tip and wing surfaces start reversing direction and instead of being only downward forces of weight, they become upward forces of lift.

**wipe** /waɪp/ verb to clean or to dry by using a cloth ○ In the event of hydraulic fluid spillage on paintwork, the affected area should be wiped clean immediately.

**wiper** /waɪpər/ noun a device with a rubber blade which clears rain, snow, etc., from a windscreen ○ In some circumstances, such as heavy rainstorms, the windscreen wipers may not be able to cope and pilot’s visibility is impaired.

**wire** /waɪr/ noun metal drawn out into the form of a thread or string ○ While the shunt coil is made of fine wire which gives a high resistance and small current flow, the series coil is made of thick wire, which gives a low resistance and large current flow.

**wire mesh** /waɪr meʃ/ noun metal sheeting made of criss-crossed wiring

**withdraw** /ˈwɪdər/ verb to pull back, to draw back ○ Instructions are given to the cabin crew to arm the escape devices immediately the boarding steps or airbridges are withdrawn.

(NOTE: withdrew – withdrawn)

**within** /ˈwɪðɪn/ preposition in or inside ○ Great care must be taken to ensure that the aircraft operates within regulated or permissible weight limits. ○ within two hours in about two hours or less, but not more

**windscreen wipers** may not be able to cope and pilot’s visibility is impaired. ○ In some circumstances, such as heavy rainstorms, the windscreen wipers may not be able to cope and pilot’s visibility is impaired.

**WMO** abbreviation World Meteorological Organization

**work** /wɜːk/ noun 1. the operation of a force to produce movement or some other physical change ○ 1 horsepower is defined as 33,000 foot-pounds of work accomplished in one minute (a foot-pound being the ability to lift a one pound weight a distance of one foot). 2. something which has to be done, e.g. maintenance ○ Work is being carried out on the auxiliary power unit (APU). 3. something done to earn a living ○ She enjoys her work as an airport security officer. 4. to do something to earn a living ○ She works for a large airline. 4. to do something to earn a living ○ She works for a large airline. 4. to do something to earn a living ○ She works for a large airline. 4. to do something to earn a living ○ She works for a large airline.

**working conditions** /ˈwɜːkɪŋ kan dɪʃən/ plural noun those aspects of working lives which affect the way people feel about their work

**work load** /ˈwɜːk ˈloʊd/ noun the share of work done by a person, system or device

**WP** abbreviation waypoint
X-ray /'eks rɛɪ/ noun 1. a ray with a very short wavelength, which is invisible, but can go through soft tissue or material and register as a photograph on a film 2. a photograph taken using X-rays verb to take an X-ray photograph of luggage

yard /jɑːd/ noun a unit of length in the US and British Imperial Systems equal to 3 ft or 0.9144 m. Abbreviation yd

yaw /jɔː/ noun rotation of the aircraft around its vertical axis 3-axis control of roll, pitch and yaw is effected by ailerons, elevators and rudder verb to rotate around the vertical axis Single-engine, propeller-driven aircraft tend to yaw on take-off.

yoke /joʊk/ noun 1. a type of aircraft control column by which the pilot controls ailerons by rotating a device on top of the column to the left or right 3. the yoke was damaged in the incident.

Z abbreviation Zulu time

zero /ˈzɪərəʊ/ noun nought or the figure 0 3. if the atmospheric pressure at an airfield is 1,000 millibars (mb) and this pressure is set on the sub-scale of an aircraft altimeter, then when that aircraft touches down at the airfield, the altimeter will read zero.

zero-zero /ˈzɪərəʊ ˈzɪərəʊ/ adjective referring to flying conditions of thick, low cloud when a pilot can see nothing ahead and nothing above or below the aircraft

zonal /ˈzoʊn(ə)/ adjective referring to one of the five parts into which the Earth’s surface is divided by imaginary lines parallel to the equator 3. the circulation of air around the Earth is zonal in character.

zone /ˈzoʊn/ noun 1. an area with particular features or purpose 2. an administrative area of airspace 3. one of five divisions into which the Earth’s surface is divided by imaginary lines parallel to the equator 3. climatic zone

zoom /zuːm/ verb to make an aircraft climb rapidly at a very steep angle, or move upwards in this way

Zulu time /ˈzuːluː taim/ noun 3. Greenwich Mean Time
SUPPLEMENTS

The Phonetic Alphabet
Standard words and phrases used in pilot communications
Aircraft registration codes
Airline codes
Airport codes
Local times around the world
International dialling codes
Standard symbols and abbreviations
Weights and measures
Conversion factors
The Phonetic Alphabet

Certain letters of the alphabet sound very similar, especially when a person is talking on the telephone or radio. The phonetic alphabet is designed to prevent confusion, by using a distinctive word to represent each letter.

<table>
<thead>
<tr>
<th>Letter</th>
<th>Word</th>
<th>Pronunciation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aa</td>
<td>Alpha*</td>
<td>'ælfə</td>
</tr>
<tr>
<td>Bb</td>
<td>Bravo</td>
<td>'brɒvə</td>
</tr>
<tr>
<td>Cc</td>
<td>Charlie</td>
<td>'tʃuəli</td>
</tr>
<tr>
<td>Dd</td>
<td>Delta</td>
<td>'deltə</td>
</tr>
<tr>
<td>Ee</td>
<td>Echo</td>
<td>'ekəu</td>
</tr>
<tr>
<td>Ff</td>
<td>Foxtrot</td>
<td>'fɒkstrɒt</td>
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<tr>
<td>Gg</td>
<td>Golf</td>
<td>gəlf</td>
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<tr>
<td>Hh</td>
<td>Hotel</td>
<td>həʊˈtel</td>
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<td>India</td>
<td>'ɪndiə</td>
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<td>Jj</td>
<td>Juliet</td>
<td>'dʒuəli'et</td>
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<td>Kilo</td>
<td>'kiəlu</td>
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<td>Lima</td>
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<td>Mm</td>
<td>Mike</td>
<td>məik</td>
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<td>Nn</td>
<td>November</td>
<td>ə'novəmbr</td>
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<tr>
<td>Oo</td>
<td>Oscar</td>
<td>'ɒskə</td>
</tr>
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<td>Pp</td>
<td>Papa</td>
<td>'pæpə</td>
</tr>
<tr>
<td>Qq</td>
<td>Quebec</td>
<td>kwɪ'bek</td>
</tr>
<tr>
<td>Rr</td>
<td>Romeo</td>
<td>'rəʊmiəʊ</td>
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<td>Sierra</td>
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<td>Tt</td>
<td>Tango</td>
<td>'tæŋɡəʊ</td>
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<td>Uu</td>
<td>Uniform</td>
<td>ɪˈjuːniəfɪm</td>
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<tr>
<td>Vv</td>
<td>Victor</td>
<td>'vɪktə</td>
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<tr>
<td>Ww</td>
<td>Whisky**</td>
<td>'wɜːski</td>
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<td>Xx</td>
<td>X-Ray</td>
<td>'eksreɪ</td>
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<tr>
<td>Yy</td>
<td>Yankee</td>
<td>'jæŋki</td>
</tr>
<tr>
<td>Zz</td>
<td>Zulu</td>
<td>ˈzuːluː</td>
</tr>
</tbody>
</table>

* Alfa in US English
** Whiskey in US English
### Standard words and phrases

<table>
<thead>
<tr>
<th>Word/Phrase</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acknowledge</td>
<td>Let me know that you have received and understood this message.</td>
</tr>
<tr>
<td>Affirm</td>
<td>Yes</td>
</tr>
<tr>
<td>Approved</td>
<td>I give you permission for what you asked.</td>
</tr>
<tr>
<td>Cancel</td>
<td>Cancel the last clearance I gave to you.</td>
</tr>
<tr>
<td>Check</td>
<td>Examine a system or procedure.</td>
</tr>
<tr>
<td>Cleared</td>
<td>I give permission for you to continue, bearing in mind the conditions already given.</td>
</tr>
<tr>
<td>Confirm</td>
<td>Have I correctly received the following …? or Did you correctly receive this message?</td>
</tr>
<tr>
<td>Contact</td>
<td>Contact by radio …</td>
</tr>
<tr>
<td>Correct</td>
<td>That is correct.</td>
</tr>
<tr>
<td>Correction</td>
<td>An error was made in the last transmission. What follows is correct.</td>
</tr>
<tr>
<td>Disregard</td>
<td>Assume that the last transmission was not sent.</td>
</tr>
<tr>
<td>How do you read?</td>
<td>Tell me how good this transmission is on a 1 to 5 scale where 1 = unreadable (cannot understand) to 5 = excellent reception (no difficulty in understanding).</td>
</tr>
<tr>
<td>I say again</td>
<td>I am repeating in order to make my meaning very clear.</td>
</tr>
<tr>
<td>Over</td>
<td>My transmission is finished and I want a response from you.</td>
</tr>
<tr>
<td>Out</td>
<td>This exchange of transmissions is finished. I do not want a response from you.</td>
</tr>
<tr>
<td>Pass your message</td>
<td>Proceed with your message.</td>
</tr>
<tr>
<td>Read back</td>
<td>Repeat all, or the specified part of this message back to me exactly as received.</td>
</tr>
<tr>
<td>Request</td>
<td>I want to know or I want to have.</td>
</tr>
<tr>
<td>Roger</td>
<td>I have received all of your last transmission.</td>
</tr>
<tr>
<td>Say again</td>
<td>Repeat all, or the following part of your last transmission.</td>
</tr>
<tr>
<td>Speak slower</td>
<td>Speak more slowly.</td>
</tr>
<tr>
<td>Standby</td>
<td>Wait and I will call you.</td>
</tr>
<tr>
<td>Verify</td>
<td>Check and confirm with me.</td>
</tr>
<tr>
<td>Wilco</td>
<td>I understand your message and will comply with it.</td>
</tr>
<tr>
<td>Words Twice</td>
<td><em>(as a request)</em> Communication is difficult. Please send every word or group of words twice.</td>
</tr>
<tr>
<td></td>
<td><em>(as information)</em> Because communication is difficult, every word or group of words in this message will be sent twice.</td>
</tr>
</tbody>
</table>
### Aircraft registration codes

These codes are painted on all aircraft, showing their country of registration.

<table>
<thead>
<tr>
<th>Code</th>
<th>Country</th>
<th>Code</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>3A</td>
<td>Monaco</td>
<td>A3</td>
<td>Tonga</td>
</tr>
<tr>
<td>3B</td>
<td>Mauritius</td>
<td>A40</td>
<td>Oman</td>
</tr>
<tr>
<td>3C</td>
<td>Equatorial Guinea</td>
<td>A5</td>
<td>Bhutan</td>
</tr>
<tr>
<td>3D</td>
<td>Swaziland</td>
<td>A6</td>
<td>United Arab Emirates</td>
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<td>3X</td>
<td>Guinea</td>
<td>A7</td>
<td>Qatar</td>
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<td>Azerbaijan</td>
<td>A9C</td>
<td>Bahrain</td>
</tr>
<tr>
<td>4R</td>
<td>Sri Lanka</td>
<td>AP</td>
<td>Pakistan</td>
</tr>
<tr>
<td>4U</td>
<td>United Nations Organisation</td>
<td>B</td>
<td>China &amp; Taiwan</td>
</tr>
<tr>
<td>4X</td>
<td>Israel</td>
<td>B-H</td>
<td>Hong Kong</td>
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<td>C3</td>
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<td>C5</td>
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<td>Mauritania</td>
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<td>C9</td>
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<td>New Caledonia (France)</td>
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<td>Burundi</td>
<td>F</td>
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<td>9V</td>
<td>Singapore</td>
<td>F</td>
<td>Martinique (France)</td>
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<td>9XR</td>
<td>Rwanda</td>
<td>F</td>
<td>Tahiti (French)</td>
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<td>9Y</td>
<td>Trinidad and Tobago</td>
<td>F</td>
<td>Polynesia</td>
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<td>A2</td>
<td>Botswana</td>
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## Aircraft registration codes continued

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<th>Code</th>
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<td>Solomon Islands</td>
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<tr>
<td>HA</td>
<td>Hungary</td>
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<td>Ecuador</td>
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<td>Haiti</td>
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- Airline names are listed next to the codes.
- Some codes may have additional information in brackets.
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<td>yard(s)</td>
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Weights and Measures: Metric Measures

**Length**
- 1 millimetre (mm) = 0.0394 in
- 1 centimetre (cm) = 10 mm = 0.3937 in
- 1 decimetre (dm) = 10 cm = 3.937 in
- 1 metre (m) = 100 cm = 1.0936 yds
- 1 kilometre (km) = 1000 m = 0.6214 mile

**Area**
- 1 square millimetre (mm\(^2\)) = 0.0016 sq. in.
- 1 square centimetre (cm\(^2\)) = 100 mm\(^2\) = 0.155 sq. in
- 1 square metre (m\(^2\)) = 10,000 cm\(^2\) = 1.196 sq. yds
- 1 are (a) = 100 m\(^2\) = 119.6 sq. yds
- 1 hectare (ha) = 100 ares = 2.4711 acres
- 1 square kilometre (km\(^2\)) = 100 hectares = 0.3861 sq. mile

**Weight**
- 1 milligram (mg) = 0.0154 grain
- 1 gram (g) = 1000 mg = 0.0353 oz
- 1 kilogram (kg) = 1000 g = 2.2046 lb
- 1 tonne (t) = 1000 kg = 0.9842 ton

**Volume**
- 1 cubic centimetre (cm\(^3\)) = 0.061 cu. in
- 1 cubic decimetre (dm\(^3\)) = 1000 cm\(^3\) = 0.0351 cu. ft
- 1 cubic metre (m\(^3\)) = 1000 dm\(^3\) = 1.308 cu. yds

**Liquid Volume**
- 1 litre (l) = 1 dm\(^3\) = 1.76 pt
- 1 heciolitre (hl) = 100 l = 22 gal
## Weights and Measures: Imperial Measures

### Length

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<td>= 2.54 cm</td>
<td>0.0254 m</td>
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<td>1 foot (ft)</td>
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<td>= 3 ft</td>
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<td>1 rod (rd)</td>
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<td>= 4 rds</td>
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<td>1 furlong</td>
<td>= 10 chains</td>
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<td>1 mile</td>
<td>= 8 furlongs</td>
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<td>1 nautical mile</td>
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### Area

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<td>1 square foot</td>
<td>= 144 sq. ins</td>
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<td>1 square yard</td>
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<td>1 acre</td>
<td>= 4840 sq. yds</td>
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<td>1 square mile</td>
<td>= 640 acres</td>
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### Weight

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<td>= 16 oz</td>
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<td>1 long ton</td>
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### Volume

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<td>1 cubic foot</td>
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### Liquid Volume

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<td>1 pint</td>
<td>= 4 gills</td>
<td>0.5683 l</td>
</tr>
<tr>
<td>1 quart (qt)</td>
<td>= 2 pt</td>
<td>1.1365 l</td>
</tr>
<tr>
<td>1 gallon (gal)</td>
<td>= 8 pt</td>
<td>4.5461 l</td>
</tr>
<tr>
<td>1 bushel (bu)</td>
<td>= 8 gal</td>
<td>36.369 l</td>
</tr>
</tbody>
</table>

### Liquid Volume (US)

<table>
<thead>
<tr>
<th>Unit</th>
<th>Conversion</th>
<th>Metric Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 fluid ounce (US)</td>
<td>= 29.574 ml</td>
<td>0.029574 l</td>
</tr>
<tr>
<td>1 pint (US)</td>
<td>= 16 fl. oz (US)</td>
<td>0.4723 l</td>
</tr>
<tr>
<td>1 gallon (US)</td>
<td>= 8 pt (US)</td>
<td>3.7854 l</td>
</tr>
</tbody>
</table>
## Conversion factors: Imperial to Metric

### Length

<table>
<thead>
<tr>
<th>Imperial</th>
<th>Metric</th>
<th>Multiply by</th>
</tr>
</thead>
<tbody>
<tr>
<td>inches</td>
<td>millimetres</td>
<td>25.4</td>
</tr>
<tr>
<td>inches</td>
<td>centimetres</td>
<td>2.54</td>
</tr>
<tr>
<td>feet</td>
<td>metres</td>
<td>0.3048</td>
</tr>
<tr>
<td>yards</td>
<td>metres</td>
<td>0.9144</td>
</tr>
<tr>
<td>statute miles</td>
<td>kilometres</td>
<td>1.6093</td>
</tr>
<tr>
<td>nautical miles</td>
<td>kilometres</td>
<td>1.852</td>
</tr>
</tbody>
</table>

### Area

<table>
<thead>
<tr>
<th>Imperial</th>
<th>Metric</th>
<th>Multiply by</th>
</tr>
</thead>
<tbody>
<tr>
<td>square inches</td>
<td>square centimetres</td>
<td>6.4516</td>
</tr>
<tr>
<td>square feet</td>
<td>square metres</td>
<td>0.0929</td>
</tr>
<tr>
<td>square yards</td>
<td>square metres</td>
<td>0.8361</td>
</tr>
<tr>
<td>acres</td>
<td>hectares</td>
<td>0.4047</td>
</tr>
<tr>
<td>square miles</td>
<td>square kilometres</td>
<td>2.5899</td>
</tr>
</tbody>
</table>

### Volume

<table>
<thead>
<tr>
<th>Imperial</th>
<th>Metric</th>
<th>Multiply by</th>
</tr>
</thead>
<tbody>
<tr>
<td>cubic inches</td>
<td>cubic centimetres</td>
<td>16.3871</td>
</tr>
<tr>
<td>cubic feet</td>
<td>cubic metres</td>
<td>0.0283</td>
</tr>
<tr>
<td>cubic yards</td>
<td>cubic metres</td>
<td>0.7646</td>
</tr>
</tbody>
</table>

### Liquid Volume

<table>
<thead>
<tr>
<th>Imperial</th>
<th>Metric</th>
<th>Multiply by</th>
</tr>
</thead>
<tbody>
<tr>
<td>fluid ounces (UK)</td>
<td>litres</td>
<td>0.0284</td>
</tr>
<tr>
<td>fluid ounces (US)</td>
<td>litres</td>
<td>0.0296</td>
</tr>
<tr>
<td>pints (UK)</td>
<td>litres</td>
<td>0.5682</td>
</tr>
<tr>
<td>pints (US)</td>
<td>litres</td>
<td>0.4732</td>
</tr>
<tr>
<td>gallons (UK)</td>
<td>litres</td>
<td>4.546</td>
</tr>
<tr>
<td>gallons (US)</td>
<td>litres</td>
<td>3.7854</td>
</tr>
</tbody>
</table>

### Weight

<table>
<thead>
<tr>
<th>Imperial</th>
<th>Metric</th>
<th>Multiply by</th>
</tr>
</thead>
<tbody>
<tr>
<td>ounces (avoirdupois)</td>
<td>grams</td>
<td>28.3495</td>
</tr>
<tr>
<td>ounces (troy)</td>
<td>grams</td>
<td>31.1035</td>
</tr>
<tr>
<td>pounds</td>
<td>kilograms</td>
<td>0.4536</td>
</tr>
<tr>
<td>tons (long)</td>
<td>tonnes</td>
<td>1.016</td>
</tr>
</tbody>
</table>
# Conversion factors: Metric to Imperial

<table>
<thead>
<tr>
<th>Length</th>
<th>Multiply by</th>
</tr>
</thead>
<tbody>
<tr>
<td>millimetres ➔ inches</td>
<td>0.0394</td>
</tr>
<tr>
<td>centimetres ➔ inches</td>
<td>0.3937</td>
</tr>
<tr>
<td>metres ➔ feet</td>
<td>3.2806</td>
</tr>
<tr>
<td>metres ➔ yards</td>
<td>1.9036</td>
</tr>
<tr>
<td>kilometres ➔ statute miles</td>
<td>0.6214</td>
</tr>
<tr>
<td>kilometres ➔ nautical miles</td>
<td>0.54</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Area</th>
<th>Multiply by</th>
</tr>
</thead>
<tbody>
<tr>
<td>square centimetres ➔ square inches</td>
<td>0.155</td>
</tr>
<tr>
<td>square metres ➔ square feet</td>
<td>10.764</td>
</tr>
<tr>
<td>square metres ➔ square yards</td>
<td>1.196</td>
</tr>
<tr>
<td>hectares ➔ acres</td>
<td>2.471</td>
</tr>
<tr>
<td>square kilometres ➔ square miles</td>
<td>0.386</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Volume</th>
<th>Multiply by</th>
</tr>
</thead>
<tbody>
<tr>
<td>cubic centimetres ➔ cubic inches</td>
<td>0.061</td>
</tr>
<tr>
<td>cubic metres ➔ cubic feet</td>
<td>35.315</td>
</tr>
<tr>
<td>cubic metres ➔ cubic yards</td>
<td>1.308</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Liquid Volume</th>
<th>Multiply by</th>
</tr>
</thead>
<tbody>
<tr>
<td>litres ➔ fluid ounces (UK)</td>
<td>35.1961</td>
</tr>
<tr>
<td>litres ➔ fluid ounces (US)</td>
<td>33.8150</td>
</tr>
<tr>
<td>litres ➔ pints (UK)</td>
<td>1.7598</td>
</tr>
<tr>
<td>litres ➔ pints (US)</td>
<td>2.1134</td>
</tr>
<tr>
<td>litres ➔ gallons (UK)</td>
<td>0.2199</td>
</tr>
<tr>
<td>litres ➔ gallons (US)</td>
<td>0.2642</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Weight</th>
<th>Multiply by</th>
</tr>
</thead>
<tbody>
<tr>
<td>grams ➔ ounces (avoirdupois)</td>
<td>0.0353</td>
</tr>
<tr>
<td>grams ➔ ounces (troy)</td>
<td>0.0322</td>
</tr>
<tr>
<td>kilograms ➔ pounds</td>
<td>2.2046</td>
</tr>
<tr>
<td>tonnes ➔ tons (long)</td>
<td>0.9842</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Operation (in sequence)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Celsius ➔ Fahrenheit</td>
<td>x 9, ÷ 5, + 32</td>
</tr>
<tr>
<td>Fahrenheit ➔ Celsius</td>
<td>- 32, x 5, ÷ 9</td>
</tr>
</tbody>
</table>