

ESP
Series

Ernesto D'Acunto

FLASH

on English

for TRANSPORT & LOGISTICS



MP3 Audio Files



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Unit	Topic	Vocabulary	Skills
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 1 MP3 audio files downloadable from www.elionline.com

1

What Is English for Transport and Logistics?

In a short time you will be studying English for Transport, both by sea and by air, as well as Logistics. But do you know exactly what these topics are?

1 Read the questionnaire and fill it in to check what you already know.

- 1 If you want to sail you need a _____ licence.
 - skipper's
 - pilot's
 - driver's
- 2 What are your main sailing interests?
 - no interest
 - racing
 - cruising
 - day sailing
- 3 What are your main flying interests?
 - pleasure
 - business
 - air taxi
 - instructor
- 4 What type of lorry driver would you like to become?
 - long-haul driver (more than 500 miles)
 - short-haul driver (less than 500 miles)
 - local driver (pick-up and delivery)
- 5 Who do you have to contact to become a train driver?
 - the Ministry of Transport
 - an Insurance Company
 - the Train Operator Company
- 6 What type of boat would you like to own?
 - none
 - sailing
 - motor
- 7 What type of aircraft would you like to fly?
model name _____ number _____
- 8 What type of lorry would you like to drive?
 - single-unit lorry
 - single-trailer lorry
 - multi-trailer lorry
- 9 If you are responsible for the train, the freight and the crew you will become
 - a conductor
 - a locomotive engineer/train driver
- 10 If you actually operate a locomotive you will be
 - a conductor
 - a locomotive engineer/train driver
- 11 If you become a logistics expert, where will the stocking location of your company be?
 - at home
 - in a warehouse
 - no stocking location, all business online



Simply speaking, English for Transport and Logistics covers the language used whenever you are 'at Sea, in the Air or on Land', whether you are on a small boat or a huge cruiser, in your lorry or in an airplane, in any port, airport or railway station. It involves everything related to transport and the way goods and people are organised when they get moving or are moved. But it also involves much more. Of course the starting point is the language, so you must know grammar quite well, but vocabulary can be very specific too.

English for Transport and Logistics will challenge all your language skills:

- reading (documents about transport, technical texts);
- writing (emails, technical reports and documents, filling data in grids, filling in forms);
- listening (presentations, announcements, technical descriptions);
- speaking in an interactive way.

These are all communication skills that you will use in transport-related situations.

English for Transport and Logistics will also help you connect to many specialised subjects and topics that you will soon study at school and it will provide you with a set of technical terms in preparation for your future specific study of the language.

2 What other school subjects do you think you will study these topics in? Write the subject/s for each of the following topics. The first one is done for you.

- | | |
|--------------------------------|--|
| 1 intermodal freight transport | 4 control space |
| 2 building a ship | 5 the organisation of a port/airport/depot |
| 3 safety regulations | |

1 *Intermodal freight transport is studied in logistics.*

In this book you will study some basic, traditional topics in transport.

3 Match these topics with their contents.

- | | |
|--------------------------------|---|
| 1 watercraft construction | a <input type="checkbox"/> an engineering discipline concerned with the design of ships, boats, drill rigs, submarines, and other floating or submerged craft |
| 2 sailing | b <input type="checkbox"/> the art of controlling a boat |
| 3 safety regulations | c <input type="checkbox"/> people move under their own power, or use wheels with electric or fuel-powered engines |
| 4 intermodal freight transport | d <input type="checkbox"/> the development of components and planning of aircraft |
| 5 aircraft navigation | e <input type="checkbox"/> a means of moving freight using multiple modes of transportation |
| 6 meteorology | f <input type="checkbox"/> the discipline of preventing injury or loss at sea |
| 7 aircraft construction | g <input type="checkbox"/> the interdisciplinary scientific study of the atmosphere |
| 8 land transport | h <input type="checkbox"/> the process of planning, recording and controlling the movement of a craft from one place to another |



MY GLOSSARY

aircraft /eəkra:ft/ _____	intermodal freight transport /ɪntə'məʊdl freɪt 'trænspɔ:t/ _____
conductor /kən'dʌktə(r)/ _____	locomotive engineer /ləʊkə'məʊtɪv endʒɪ'nɪə(r)/ _____
control space /kən'trəʊl speɪs/ _____	lorry driver /'lɒrɪ 'draɪvə(r)/ _____
crew /kru:/ _____	safety /seɪfti/ _____
cruiser /kru:zə(r)/ _____	sail (v) /seɪl/ _____
depot /depəʊ/ _____	skipper /skɪpə(r)/ _____
drill rig /drɪl rɪg/ _____	stock (v) /stɒk/ _____
engine /endʒɪn/ _____	submerged /səb'mɜ:dʒd/ _____
floating /fləʊtɪŋ/ _____	trailer /treɪlə(r)/ _____
freight /freɪt/ _____	train driver /treɪn 'draɪvə(r)/ _____
goods /gʊdz/ _____	warehouse /weəhaʊs/ _____
haul (n) /hɔ:l/ _____	wheel /wi:l/ _____

2

How to Tie Knots

How to make knots is essential for sailors and for navigation in general. Every sailor must know how to make knots, because they are very important both in case of danger and also in mooring a ship or a small leisure boat. When the students of a nautical school see a knot, they immediately think of the sea and know whether that knot has been made by expert hands or not.

The three most popular knots are the hitch, the Franciscan knot and the Savoy knot. A hitch is a knot used to moor a big ship, and it is considered the 'knot par excellence'. It is used to secure the mooring rope of a ship to the bitt on the dock when mooring. The Franciscan knot and the Savoy knot are important in case of danger and are *safety knots*. They are also called 'stop' knots, because they are usually the end knots of any safe linking.

Savoy knot



Hitch



Franciscan knot



1 Match these words with their definitions.

- | | |
|----------------|--|
| 1 knot | a <input type="checkbox"/> the act of securing a vessel, usually by a cable or anchor |
| 2 sailor | b <input type="checkbox"/> it is a method of fastening or securing linear material such as a rope |
| 3 danger | c <input type="checkbox"/> a pleasure craft, not usually for professional use |
| 4 mooring | d <input type="checkbox"/> the possibility of harm or death to someone |
| 5 leisure boat | e <input type="checkbox"/> a person who navigates vessels or assists in their operation, maintenance, or service |

2 Complete the sentences with words from the text.

- Knowing how to make _____ is crucial for a sailor.
- Students of a _____ school can easily recognise knots.
- A hitch is used to _____ a big ship.
- A bitt is fixed on the _____.
- The Franciscan knot and Savoy knot are _____ knots.
- A stop knot closes a _____ linking.

3 Find the synonyms of these words in the text.

- | | | | |
|----------------|-------|----------|-------|
| 1 mariner | _____ | 4 to tie | _____ |
| 2 risk | _____ | 5 to fix | _____ |
| 3 professional | _____ | | |

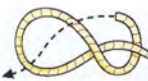
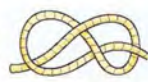

4 Write a short paragraph (50 words) describing the 3 most common types of knot, and saying why they are so important to sailors.

- 5** Learn how to make a Savoy knot.
Match the instructions to the pictures.

Instructions

- 1 make an eye
- 2 turn the rail round anticlockwise
- 3 put the rail through the eye and pull

Pictures

- A 
- B 
- C 



- 6** Now rewrite the instructions using the suggested time words. Then take a piece of string and check if you can do it.

First _____

Then _____

Finally _____

- 7** What is a Bowline knot? Read the text to find out.




The term **Bowline** (**Bowline knot**, **Bowline hitch**) refers to the knot used by a sailor to tie a line to his bow. In the past it was an important knot to the seaman in case of emergencies and a sailor learnt to tie it quickly, and while he was blindfolded by other sailors. This led to sayings such as: 'to remember the ropes', or 'to show someone the ropes'. It was a knot which did not slip, however hard it was pulled.

- 8** Match these words with their definitions.

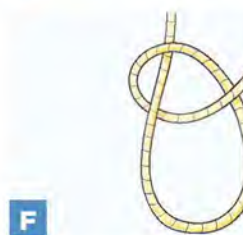
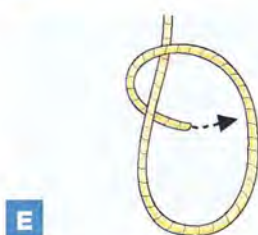
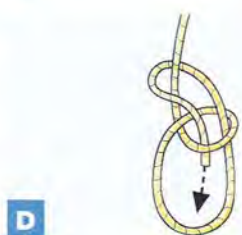
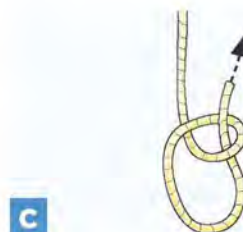
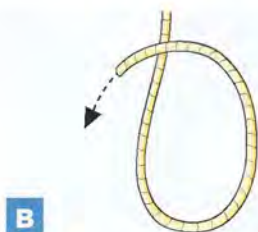
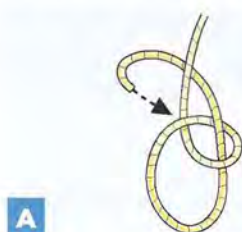
- | | |
|---------------|--|
| 1 tie | a <input type="checkbox"/> strong thick strings |
| 2 seaman | b <input type="checkbox"/> to slide or move out of position |
| 3 blindfolded | c <input type="checkbox"/> to attach two or more things together with rope or string |
| 4 ropes | d <input type="checkbox"/> another word for sailor |
| 5 slip | e <input type="checkbox"/> having your eyes covered so you cannot see |

- 9** Test your memory. In pairs, ask and answer the questions.

- 1 If you are mooring a ship which type of knot should you tie?
- 2 What do you attach the ship's rope to on a dock?
- 3 What are the two most common safety knots?
- 4 What are safety knots also known as?
- 5 Which type of knot should you be able to tie even when you cannot see?
- 6 Can you remember one expression connected to the Bowline knot?

10  Match the sentences to the corresponding pictures and put them in the right order to make a Bowline knot. Then listen and check.

- 1 Bring the working end between you and the static end.
- 2 Then bring it up through the loop.
- 3 Take the working end back round the static line.
- 4 First take a rope round your body and place the working end on top of the rope.
- 5 Finally take it down in the forced loop and pull.
- 6 Pull the working end so as to force the loop into the static end.



11 Read the text and decide if these statements are true (T) or false (F).

The Franciscan Monk's knot is easy to tie or untie and works well as a stopper.

Its name comes from the Franciscan Monks who, in lieu of a leather belt, use a rope belt, called a cincture. Three knots tied in one end that hangs down on the right side are symbols of their vows (poverty, chastity and obedience). However the Franciscan Monk's knot traditionally used as stopper seems to have no symbolic significance.

Probably this knot gave the rope just enough weight to assure it hung straight at the side (keeping it out of the way) and helped identify them as Franciscans since other orders may have used rope belts. No doubt the knot itself was well known to many.



- 1 The name Franciscan knot has religious origins.
- 2 It has four knots tied in one end.
- 3 Beside giving the rope the right weight, this knot also has a symbolic meaning.
- 4 This kind of knot was an identification sign for the monks belonging to this order.

12 Put the sentences in the correct order, then try to make your Franciscan knot.

- Make sure you make between 4 and 6 turns (4 for stopper, 6 for heaving).
- 1 Make a long loop on the bight of the rope.
- Pull on the standing part to tighten the knot. You have finished.
- Wind the ends around the bight, from the standing part end towards the tip of the bight.
- Cross the end over the standing part, then under the bight.
- Slip the end of the rope through the eye of the bight.

13 Read the text and answer the questions.

The Ancient Art of Knot Tying in China

Knots are obviously important for practical reasons all over the world, but in China they also have great artistic and symbolic value. For thousands of years knot tying has been a reflection of artistic ability and tradition in Chinese culture. Symbolism is very important to the Chinese and the knot has many symbolic meanings. In the written language the character for the knot (結, *jié*) is represented by the 絲 (*sī*) symbolising silk or rope, combined with the 吉 (*jí*) representing prosperity, long life, luck and health. The character used to represent the string is thought to resemble a moving dragon, and the dragon is of course considered the greatest animal of all in Chinese culture. The knot can also symbolise relationships, strength, harmony and emotions, and many different types of knot exist to reflect this variety.

The art of knot tying follows established rules; for example, there are 20 basic techniques for tying a knot, the knot is always made from one single piece of string, usually about 1 m long, and a well-made knot must always look the same seen from the back as from the front. Different colours are used, but the colour red is the most common because red symbolises luck and prosperity. The types of knot can be distinguished by their uses: decorative, like the butterfly or flower knot; practical, like the button knot, which is also used as a button; and purely symbolic, like the good luck knot. The ancient art of knot tying lost importance in the 20th century of the New China under communist rule, but in recent years it has seen a revival, and is once again popular in all the Chinese-speaking world.

- 1 Why is knot tying more important for the Chinese than for other nationalities?
- 2 What do the characters *sī* and *jí* represent in written Chinese?
- 3 Why is the character for string considered lucky for the Chinese?
- 4 How can you recognise when a knot is well made?
- 5 Which colour is most popular and why?
- 6 What are the three most common uses of knots in China?
- 7 When did the art of knot tying lose popularity?

14 Rewrite the following sentences taken from the text, using no more than 3 words.

- 1 The dragon is considered the greatest animal of all in Chinese culture.
→ In Chinese culture no animal is considered to be _____ the dragon.
- 2 Many different types of knot exist to reflect this variety.
→ This variety _____ the existence of many different types of knot.
- 3 A well-made knot must always look the same seen from the back as from the front.
→ If a knot is well made it _____ different seen from the back as from the front.
- 4 The colour red is the most common.
→ The colour red is _____ than any other colour.
- 5 The ancient art of knot tying lost importance in the 20th century.
→ The ancient art of knot tying became _____ in the 20th century.



MY GLOSSARY

anchor /æŋkə(r)/ _____
 bitt /bɪt/ _____
 bowline /bəʊlɪn/ _____
 bowline hitch /bəʊlɪn hɪtʃ/ _____
 bowline knot /bəʊlɪn nɒt/ _____
 cable /keɪbl/ _____
 dock /dɒk/ _____
 end knot /end nɒt/ _____
 eye /aɪ/ _____
 fasten /fɑːsn/ _____
 Franciscan knot /fræŋsɪskən nɒt/ _____
 heave /hiːv/ _____

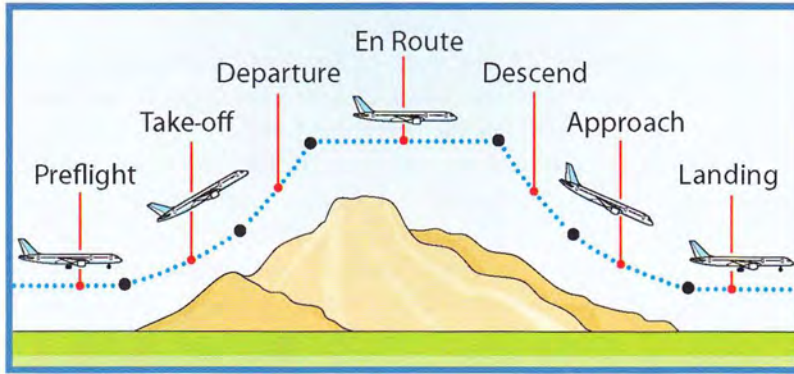
hitch /hɪtʃ/ _____
 leisure boat /leɪzə(r) bəʊt/ _____
 loop /luːp/ _____
 mooring /mɔːrɪŋ/ _____
 safe linking /seɪf lɪŋkɪŋ/ _____
 safety knot /seɪftɪ nɒt/ _____
 sailor /seɪlə(r)/ _____
 Savoy knot /səvɔɪ nɒt/ _____
 silk /sɪlk/ _____
 string /strɪŋ/ _____
 thread (v) /θred/ _____

3

Get Ready to Fly

Flight Profile and Preflight

All commercial airline flights follow a typical profile:



1 Match these words with their definitions.

- | | |
|-------------|---|
| 1 preflight | a <input type="checkbox"/> the plane lifts off the ground and climbs to a cruising altitude |
| 2 take-off | b <input type="checkbox"/> the pilot aligns the aircraft with the designated landing runway |
| 3 departure | c <input type="checkbox"/> the aircraft lands on the designated runway, taxis to the destination gate and parks at the terminal |
| 4 en route | d <input type="checkbox"/> the pilot descends and manoeuvres the aircraft to the destination airport |
| 5 descent | e <input type="checkbox"/> the aircraft travels through one or more centre airspaces and nears the destination airport |
| 6 approach | f <input type="checkbox"/> this portion of the flight starts on the ground and includes flight checks, push-back from the gate and taxi to the runway |
| 7 landing | g <input type="checkbox"/> the pilot powers up the aircraft and speeds down the runway |

2 Match the words from the box to the correct pictures.

runway ground radar ground controller gate taxiways control tower



1 _____



2 _____



3 _____



4 _____



5 _____



6 _____

3 Read the text and reorder the pictures according to the explained procedures.



Preflight

While you prepare for your flight by checking in your bags and walking to the gate, your pilot inspects your plane and files a flight plan with the control tower. All pilots must file a flight plan at least 30 minutes prior to pushing back from the gate. Your pilot reviews the weather along the intended route, maps the route and files the plan. The flight plan includes:

- airline name and flight number;
- type of aircraft and equipment;
- intended airspeed and cruising altitude;
- route of flight (departure airport, centres that will be crossed and destination airport).

Your pilot transmits this data to the control tower.

In the tower, a controller called a flight data person reviews the weather and flight plan information and enters the flight plan into the FAA (Federal Aviation Administration) host computer. The computer generates a flight progress strip that contains all of the necessary data for tracking your plane during its flight and is constantly updated.

Once the flight plan has been approved, the flight data person gives clearance to your pilot (clearance delivery) and passes the strip to the ground controller in the tower.

The ground controller is responsible for all ground traffic, which includes aircraft taxiing from the gates to take-off runways and from landing runways to the gates.

When the ground controller determines that it is safe, he or she directs your pilot to push the plane back from the gate (airline personnel operate the tugs that actually push the aircraft back and direct the plane out of the gate area).

As your plane taxis to the runway, the ground controller watches all of the airport's taxiways and uses ground radar to track all of the aircraft (especially useful in

bad weather), ensuring that your plane does not cross an active runway or interfere with ground vehicles.

The ground controller communicates with your pilot by radio and gives him instructions, such as which way to taxi and which runway to go to for take-off. Once your plane reaches the designated take-off runway, the ground controller passes the strip to the local controller. The local controller in the tower watches the skies above the airfield and uses surface radar to track aircraft. He or she is responsible for maintaining a safe distance between planes as they take off. The local controller gives the pilot final clearance for take-off when it is safe, and provides the new radio frequency for the departure controller. Once clearance is given, the pilot must decide if it is safe to take off and in this case he accelerates the plane down the runway.

As the plane leaves the ground, the local controller hands it over electronically to the departure controller of the departure airport, but still monitors the plane until it is 5 miles from the airport.

The pilot now communicates with the departure controller.

The screenshot shows a 'File Flight Plan' window with the following fields and values:

- Flight Type: IFR
- Callign: KNT754
- Aircraft Type: HB763/F
- Departure Airport: EGLL (ICAO code)
- Arrival Airport: KBOS (ICAO code)
- Alternate Airport: KJFK (ICAO code)
- Departure Time: 1010Z (UTC, 24 hour)
- Enroute Flight Time: 6 hours 15 minutes
- Fuel Available: 7 hours 30 minutes
- Cruising Airspeed: 480 (Knots true airspeed)
- Cruising Altitude: FL360 (Feet ASL or Flight Level)
- Voice Capabilities:
 - Voice Send and Receive
 - Voice Receive Only
 - Text Only
- Aircraft Capabilities: Advanced RNAV with Single FMS
- Route: CPT UL9 MALOT NATC YAV J580 YQY J575 SCLPP
- Comments: <input type="text" value="insert TMI number here ->
- Buttons: Load..., Save..., Send Flight Plan, Cancel, Help



4 Read the text again and answer the questions.

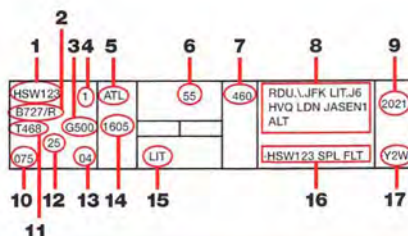
- 1 What does the pilot do before taking off?
- 2 What sort of data does the flight progress strip contain?
- 3 What happens once the flight plan has been approved?
- 4 What is the role of the ground controller?
- 5 When does the ground controller direct the pilot to push the plane back from the gate?
- 6 What happens when the plane reaches the designated runway?
- 7 What does the local controller then do?
- 8 Does the local controller stop controlling the plane after take-off?

5 All the world's major airports can be identified by a 3-letter code. Match the following codes with the airports they represent, then write the city and country where they are found.

- | | | | | | |
|-------|--|-------|-------|-------------------------------------|-------|
| 1 JFK | a <input type="checkbox"/> San Francisco | _____ | 4 SFO | d <input type="checkbox"/> Kennedy | _____ |
| 2 LHR | b <input type="checkbox"/> Johannesburg | _____ | 5 MXP | e <input type="checkbox"/> Orly | _____ |
| 3 ORY | c <input type="checkbox"/> Heathrow | _____ | 6 JNB | f <input type="checkbox"/> Malpensa | _____ |

6 Complete the table with the missing definitions.

time aircraft estimated to cross LIT (Little Rock Adams Field)
remarks area
type of aircraft
flight route with departure and destination



1 aircraft call sign	10 computer generated number for identification
2 _____	11 filed true air speed
3 actual speed across ground	12 sector number in which the aircraft is flying
4 number of amendments to original flight plan	13 strip number
5 the previous fix (this denotes in what airport the aircraft has been before)	14 time aircraft crossed previous fix
6 _____	15 coordination fix for this strip
7 the altitude at which the aircraft is flying (measured in feet)	16 _____
8 _____	17 coordination symbol to adjacent Air Traffic Control facility
9 individual beacon code	

7 In pairs, read this strip then ask and answer the questions.

DAL542	1	MOL	33	330	ATL MOL CSN	2675
MD80/A			18		J48 EMI PHL	
T469	G555	1827				
	16					
495	09		CSN			ZNY

- 1 What is the aircraft call sign? *Delta Airlines flight 542.*
- 2 What beacon code is assigned to this aircraft?
- 3 From which sector is the strip?
- 4 What is the aircraft filed true airspeed?
- 5 At what altitude will the aircraft be flying?
- 6 For what type of aircraft has this strip been prepared?
- 7 What is the coordination symbol for the adjacent air traffic control facility?

8 Listen and choose the correct answer.

1 The pilot uses the checklist when he is in the...

- A hangar.
- B hotel.
- C cockpit.

2 The checklist is controlled...

- A before each flight.
- B only once.
- C every month.

3 If there are interruptions the pilot will...

- A stop.
- B start again.
- C not care.

4 The checklist works through a system based on...

- A questions and answers.
- B answers.
- C problem solving.

5 The co-pilot...

- A checks the checklist.
- B listens.
- C calls the items.

6 The pilot...

- A writes a report.
- B waits.
- C responds out loud.

Focus on Sayings

9 Choose the correct option to best explain these flight sayings.

- 1 'A smooth landing is mostly luck; two in a row is all luck; three in a row is prevarication' means that...
 - A performing a smooth landing is very difficult.
 - B a good pilot also needs great luck.
- 2 'Never fly in the same cockpit with someone braver than you' means that...
 - A all pilots are brave.
 - B it is better to fly with someone who has your same sense of danger.
- 3 'Basic flying rules: try to stay in the middle of the air. Do not go near the edges of it. The edges of the air can be recognised by the appearance of ground, buildings, sea, trees and interstellar space. It is much more difficult to fly there' means that...
 - A air has borders and edges.
 - B you must always fly far from ground, buildings and any other dangerous obstacle.

MY GLOSSARY

amendment /ə'mendmənt/ _____
 airfield /eə'fi:ld/ _____
 beacon code /bi:kən kəʊd/ _____
 call sign /kɔ:l saɪn/ _____
 clearance delivery /klɪərəns dɪ'lɪvəri/ _____
 cruising altitude /kru:zɪŋ 'æltɪtju:d/ _____
 edge /edʒ/ _____
 file (v) /faɪl/ _____
 fix /fɪks/ _____
 flight data person /flaɪt 'deɪtə 'pɜ:sn/ _____
 flight plan /flaɪt plæn/ _____
 flight progress strip /flaɪt 'prɒɡres stri:p/ _____
 gate /geɪt/ _____

hand over /hænd 'əʊvə(r)/ _____
 host computer /həʊst kəm'pjʊ:tə(r)/ _____
 in a row /ɪn ə rəʊ/ _____
 landing runway /lændɪŋ 'rʌnweɪ/ _____
 rule /ru:l/ _____
 smooth /smu:ð/ _____
 speed across ground /spi:d ə'krɒs graʊnd/ _____
 surface /sɜ:fɪs/ _____
 taxi (v) /tæksi/ _____
 taxiway /tæksiweɪ/ _____
 track (v) /træk/ _____
 true air speed /tru: eə(r) spi:d/ _____
 tug /tʌg/ _____

4

A Ship's Structure



Modern ships are, almost without exception, built of steel. Shipbuilders today use steel which has good corrosion resistance when exposed to seawater, and which does not get brittle at low temperatures (below freezing) since many ships are at sea during cold storms in wintertime.

Steel typically has a fatigue limit, below which any quantity of stress will not cause metal fatigue and cracks. Ship design criteria generally assume that all normal loads on the ship should be below the fatigue limit for the steel used in its construction. It is wise to assume that the ship will regularly operate fully loaded, in heavy weather and strong waves, and that it will encounter its maximum operating conditions many times over during its lifetime.

Naval architecture is an engineering discipline dealing with the design, construction, maintenance and operation of marine vessels and structures. Naval architecture involves preliminary design of the vessel, its detailed design, construction, trials, operation and maintenance, launching and dry-docking. Naval architecture also involves formulation of safety regulations and damage control rules and the approval and certification of ship designs.

Due to the complexity associated with operating in a marine environment, naval architecture is a co-operative effort between groups of technically skilled individuals who are specialists in particular fields, often coordinated by a lead naval architect.

A naval architect is an engineer who is responsible for the design, construction, and/or repair of ships, boats, other marine vessels, and offshore structures, both commercial and military.

Modern engineering on this scale is essentially a team activity conducted by specialists in their respective fields and disciplines. Naval architects integrate these activities. This demanding leadership role requires managerial qualities. In addition to this leadership role, a naval architect also has a specialist function in ensuring that a safe, economic, and seaworthy design is produced. Naval architects typically work for shipyards, ship owners, design firms and equipment manufacturers, classification societies, navies and governments.

1 Read the text and decide if these statements are true (T), or false (F). Correct the false ones.

- | | |
|--|---|
| 1 Very few ships are made of steel nowadays. _____ | 5 A naval architect is often a manager. _____ |
| 2 Steel can withstand any adverse strength. _____ | 6 A naval architect usually works for his own enterprise. _____ |
| 3 Ships don't sail in stormy weather. _____ | |
| 4 A naval architect has a degree in engineering. _____ | |

2 Read the text again and answer the questions.

- | | |
|---|--|
| 1 What is it wise to assume when building a ship? | 3 Why is naval architecture a co-operative effort? |
| 2 What does naval architecture involve? | 4 What special function does a naval architect have? |

3 Complete the sentences with the words from the box.

themselves design multi-skilled fatigue limit steel

- 1 _____ has good corrosion resistance.
- 2 Cracks in steel are caused by an excess in the _____.
- 3 Naval architecture is also about the preliminary _____ of the ship.
- 4 The naval architect is a _____ engineer.
- 5 Naval architects rarely work for _____.

4 In pairs, read this old advertisement then ask and answer the questions.

1 What is the company name?

2 What type of dock has it got?

3 What type of vessels can it repair and build?

NEWPORT NEWS
SHIPBUILDING AND DRY DOCK COMPANY.
 WORKS AT NEWPORT NEWS, VA.
 (ON HAMPTON ROADS.)
 Equipped with a Simpson's Basin Dry Dock, capable of docking a vessel 600 feet long, drawing 25 feet of water, at any stage of the tide.
 REPAIRS MADE PROMPTLY AND AT REASONABLE RATES.
• SHIP AND ENGINE BUILDERS •
 For Estimates and further particulars, address
 C. B. ORCUTT, Pres't, No. 1 Broadway, New York.

4 Where is the company's headquarters?

5 What is its address?

5 Now look at this advertisement and write the correct questions for these answers.

THE FAIRFIELD
SHIPBUILDING ENGINEERING CO. (LIMITED)

BUILDERS OF
BATTLESHIPS, CRUISERS, DESTROYERS,
 AND WAR VESSELS OF EVERY DESCRIPTION COMPLETE IN ALL RESPECTS WITH ARMOUR AND ARMAMENT

MAIL AND PASSENGER STEAMERS
 MERCHANT VESSELS OF THE LARGEST SIZE AND TYPE
 TURBINE STEAMERS — CARGO STEAMERS

HEAD OFFICES: FAIRFIELD WORKS, GOVAN, NEAR GLASGOW.
 LONDON OFFICES: 9, VICTORIA STREET, WESTMINSTER.

- 1 _____
They produce different types of war vessels, with armour and armament.
- 2 _____
They are in Fairfield Works, Govan, near Glasgow.
- 3 _____
They are at 9 Victoria Street, Westminster.
- 4 _____
It is a limited one.
- 5 _____
They produce mail and passenger steamers, merchant vessels, turbine steamers and cargo steamers.

6 Fill in the grid with the appropriate terms.

	Noun	Adjective		Noun	Adjective
1	length	long	4	width	_____
2	weight	_____	5	height	_____
3	speed	_____	6	depth	_____

7 Listen to the description of the construction of a ship and discover its dimensions. Complete the table.

Length overall	four _____ long
Propulsion	a monster _____ engine
Material used	_____
Shipyard crane lifting power	_____ tons
Type of ship	_____ ship
Place of construction	_____

The word 'vessel' describes any watercraft, including non-displacement craft and seaplanes, used or capable of being used as a means of transportation on water. The principal elements of naval architecture are listed below.

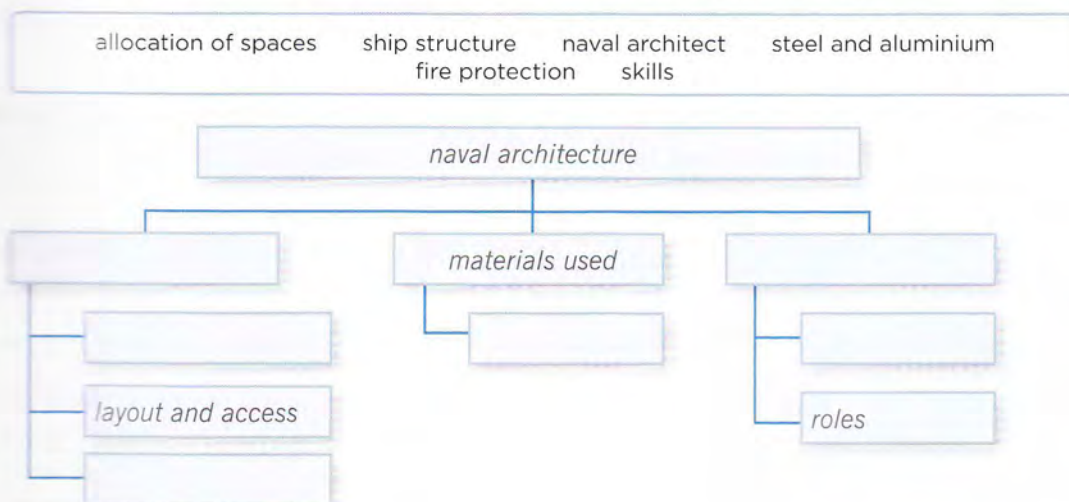
8 Match these words with their definitions.

- 1 stability
- 2 hydrostatics
- 3 propulsion
- 4 trim
- 5 structures
- 6 arrangements
- 7 construction
- 8 controllability (manoeuvring)
- 9 hydrodynamics

- a it concerns the vessel's ability to remain afloat. This involves computing buoyancy (displacement) and other hydrostatic properties.
- b it refers to the longitudinal inclination of the vessel.
- c the ability of a vessel to return to an upright position after being inclined by wind, sea, or loading conditions.
- d it concerns the flow of water around the ship's hull, bow and stern.
- e the movement of the vessel through water using propellers, thrusters, water jets, sails.
- f it involves controlling and maintaining the position and direction of the vessel.
- g it involves the selection of construction material and the structural analysis of the global and local strength of the vessel.
- h this involves concept design, layout and access, fire protection, allocation of spaces, ergonomics and capacity.
- i construction depends on the material used. When steel or aluminium are used this involves the welding of the plates and profiles, marking, cutting and bending, followed by erection and launching.



9 Complete the flow chart with the correct terms and expressions from the box.

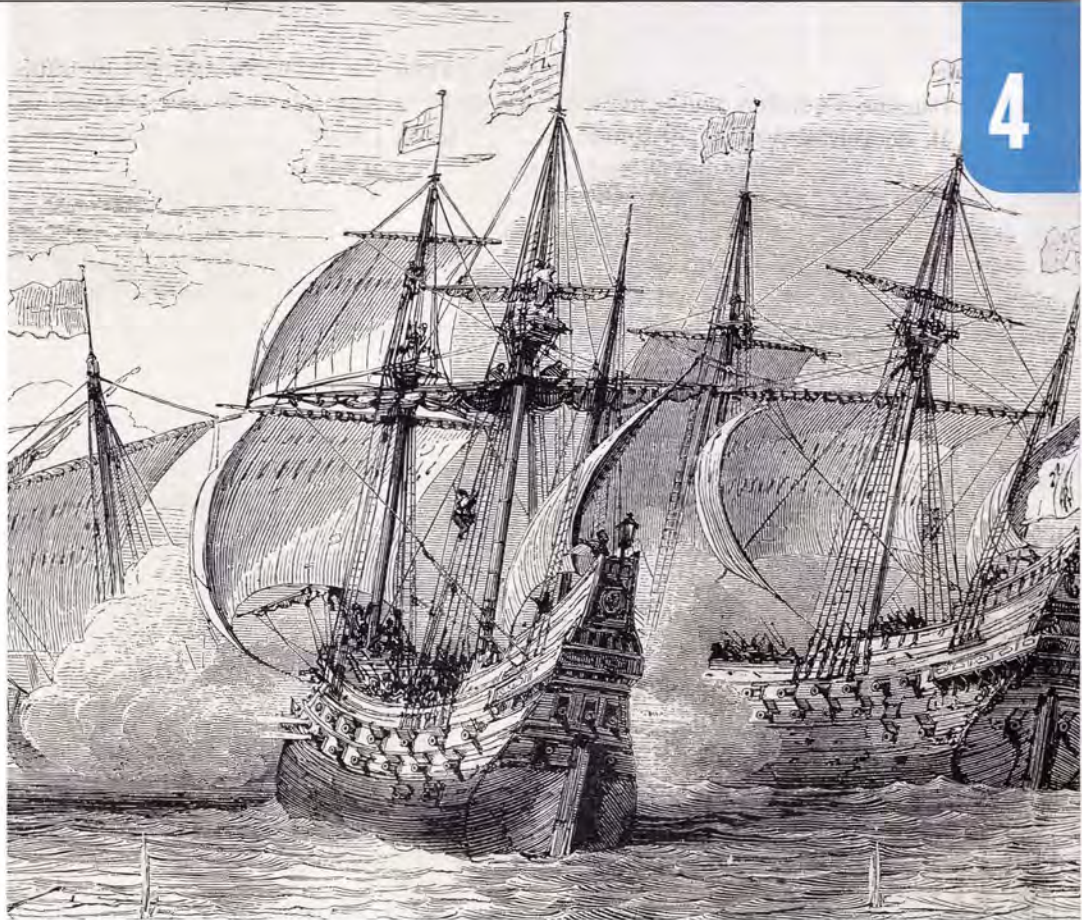


Focus on Sayings

10 Match each saying with its correct definition.

- 1 to know the ropes
- 2 footloose
- 3 first rate
- 4 windfall
- 5 feeling blue
- 6 cut and run
- 7 touch and go

- a when a ship's captain died during a voyage, his ship would return to port flying a blue flag and bearing a blue stripe on its hull. That's why this expression means depression or sadness today
- b free to do what you like and go where you like because you have no responsibilities. The bottom portion of a sail is called the foot. If it is not secured, it is loose and it dances randomly in the wind
- c a dangerous, uncertain and precarious situation. This referred to a ship's keel touching the bottom and getting right off again
- d it implies excellence. From the 16th century until steam-powered ships took over, British naval ships were rated as to the number of heavy cannon they carried. A ship of 100 or more guns was an extremely good line-of-battle ship
- e to understand how to do something. To know all the methods required. There are miles of rope in the rigging of a ship. You had to memorise where they were located. It took an experienced seaman to know them
- f to run away cowardly. If a smaller ship at anchor was discovered by a larger enemy vessel, it might decide to cut the anchor cable and sail off in a hurry
- g an unexpected stroke of good luck. It referred to a sudden unexpected rush of wind from a mountainous shore which allowed a ship more leeway



MY GLOSSARY

afloat /ə'fləʊt/ _____	overall length /əʊvə'rɔ:l lɛŋθ/ _____
brittle /brɪtl/ _____	random /rændəm/ _____
buoyancy /'bɔɪənsi/ _____	rate (v) /reɪt/ _____
cargo /kɑ:gəʊ/ _____	seaworthy /si:wɜ:ði/ _____
crane /kreɪn/ _____	ship owner /ʃɪp 'əʊnə(r)/ _____
displacement /dɪ'spleɪsmənt/ _____	shipyard /ʃɪpjɑ:d/ _____
dry docking /draɪ dɒkɪŋ/ _____	steamer /sti:mə(r)/ _____
fatigue limit /fə'ti:g 'lɪmɪt/ _____	steel /sti:l/ _____
freezing /fri:zɪŋ/ _____	stern /stɜ:n/ _____
heavy weather /hevi 'weðə(r)/ _____	storm /stɔ:m/ _____
hull /hʌl/ _____	stroke /strəʊk/ _____
keel /ki:l/ _____	thruster /θrʌstə(r)/ _____
launching /lɔ:ntʃɪŋ/ _____	trial /traɪəl/ _____
leeway /li:wei/ _____	watercraft /wɔ:təkrɑ:ft/ _____
load /ləʊd/ _____	wave /weɪv/ _____
offshore /ɒfʃɔ:(r)/ _____	

5

An Aeroplane's Structure

The Basics of Airplane Construction

A fixed-wing aircraft consists of 5 main components: the fuselage, the wings, the stabilisers, the engines and the landing gear.

The fuselage is a long, thin body, often cylindrical, and usually with tapered or rounded ends to make its shape aerodynamically smooth. It may contain the flight crew, passengers, cargo, fuel and engines.

The pilots operate the plane from a cockpit located at the front or top of the fuselage and equipped with controls, windows and instruments. All the other parts of the plane are attached to the fuselage.

The wing is shaped to deflect air downward as the plane moves forward, generating upward lifting force to support it in flight. The wing also stabilises the plane's roll (tilt left or right).

There are two types of stabiliser: a vertical stabiliser and

a horizontal stabiliser. The first of these is mounted at the rear of the plane and typically protruding above it. The vertical stabiliser stabilises the plane's yaw (turn left or right) and mounts the rudder which controls its rotation along that axis. The horizontal stabiliser, or tail-plane, is mounted at the tail of the plane, near the vertical stabiliser and is used to stabilise the plane's pitch (tilt up or down).

The engines provide thrust to push the plane forward through the air. The most common propulsion units are propellers (powered by turbine engines) and jet engines (which provide thrust directly from the engine and usually also from a large fan mounted within the engine). The landing gear is a set of wheels that support the plane while it is on the surface. On some planes the landing gear retracts during flight to reduce drag.



1 Read the text and complete these sentences.

- 1 The fuselage is cylindrical and tapered because it must be _____.
- 2 The wing must be shaped in a particular way in order to _____.
- 3 Another name for the horizontal stabiliser is the _____.
- 4 The difference between the two types of propulsion units is that _____.
- 5 The reason for which the landing gear on some planes is retractable is _____.

2 Match these words with their definitions.

- | | |
|---------------|---|
| 1 fuselage | a <input type="checkbox"/> the part of the plane where the pilots sit |
| 2 stabilisers | b <input type="checkbox"/> the left or right tilt of the plane |
| 3 thrust | c <input type="checkbox"/> the up and down tilt |
| 4 cockpit | d <input type="checkbox"/> the long, thin body of the plane |
| 5 yaw | e <input type="checkbox"/> the left and right turning movement of the plane |
| 6 pitch | f <input type="checkbox"/> the components of the plane that control its stability plane |
| 7 roll | g <input type="checkbox"/> the part of the plane which controls its rotation |
| 8 rudder | h <input type="checkbox"/> the forward movement created by the engines |

How an Aeroplane Flies

- 3** There are four forces acting on a plane while it flies, each 'pushing' in a different direction to keep the plane in the air. Can you put them in the right place? Then read and check.

WEIGHT LIFT DRAG THRUST

To achieve flight, you have to exploit the four basic aerodynamic forces: lift, weight, thrust and drag. They are like four arms holding the plane in the air, each pushing from a different direction. Thrust is the aerodynamic force that pushes or pulls the airplane forward through space. The opposing aerodynamic force is drag, or the friction that resists the motion of an object. If you stick your hand out of a car window while moving, you can experience a very simple demonstration of drag at work. The amount of drag that your hand creates depends on a few factors, such as the size of your hand, the speed of the car and the density of the air. If you slow down, you notice that the drag on your hand decreases.

Every object on Earth has weight, a product of both gravity and mass. A Boeing 747-8 passenger airliner, for instance, has a maximum take-off weight of 487.5 tons (442 metric tons), the force with which the weighty plane is drawn toward the Earth.

Weight's opposing force is lift, which holds an airplane in the air. This can be accomplished through the use of a wing. The wing is shaped and tilted so that the air moving over it travels faster than the air moving underneath. The faster air moving over the wing exerts less pressure on it than the slower air moving underneath the wing. The result is an upward push or lift. In the field of fluid dynamics, this is known as Bernoulli's principle.



- 4** In pairs, look at the table then ask and answer the questions.

Aircraft Specifications		
Model	787-8	787-9
Cockpit crew	2	2
Seating	210-250	250-290
Length	186 ft (56.7 m)	206 ft (62.8 m)
Fuselage dimensions	Width: 18 ft 11 in (5.77 m) Height: 19 ft 7 in (5.97 m)	Width: 18 ft 11 in (5.77 m) Height: 19 ft 7 in (5.97 m)
Cargo capacity	4,82 cu ft (137 m ³)	6,086 cu ft (172 m ³)
Maximum take-off weight	502,500 lb (228,000 kg)	553,000 lb (251,000 kg)
Maximum landing weight	380,000 lb (172,000 kg)	425,000 lb (193,000 kg)
Maximum zero-fuel weight	355,000 lb (161,000 kg)	400,000 lb (181,000 kg)
Engines (x2)	General Electric Genx or Rolls Royce Trent 1000	

- 1 What type of aircraft models are described?
- 2 How many crew members can there be in the cockpit?
- 3 Which model is the biggest one?
- 4 Which model can carry the highest weight?
- 5 What brand can the engines be?

5 Read the text and answer the questions.

Building the Airbus A380

April 27th, 2005, Toulouse, South-Western France. Six test pilots are about to fly a massive aeroplane. It is in the record books. It has taken over ten years and six billion pounds to get to this moment: the maiden flight of the Airbus A380, the biggest airliner ever built. There is one plane that since it first flew back in 1969, has never been replaced – the 747 Jumbo Jet. The 747 survived because in all that time it never had any direct competition. No one ever had the courage or the money needed to take on this aircraft with an entirely new design until now!



With this project, European plane maker Airbus aims to dominate the market for years to come. Components from all over Europe are shipped to France for final assembly. It is a fine example of high technology engineering. Airbus was created in the 1960s when Spain, Britain, France and Germany decided to challenge the might of the American aviation industry. The first aircraft took off in 1972 and today they build over 300 planes a year. The A380 project began seventeen years earlier, in 1988, when the first highly secret meetings were held. Designers and engineers worked for ten years. The ideal size was studied by the airline, struggling to increase passenger numbers in a phase of increased air traffic congestion. The resulting design was a plane with 49% more space than a 747, capable of carrying over 850 passengers.

- 1 Why is the A380 in the record books?
- 2 What were the two main problems that stopped competitors designing a new plane?
- 3 How many countries own the Airbus company?
- 4 What was one of the biggest challenges when designing the new plane?
- 5 Why was it so important to meet this challenge?

6 Write the correct questions for these answers. Use the question words from the box.

Why	How long	What	How many	How much	When
-----	----------	------	----------	----------	------

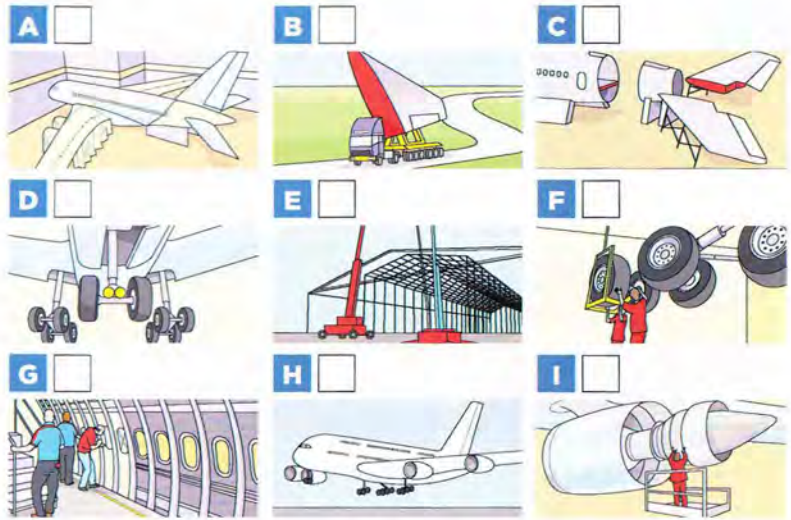
- 1 _____ ?
It was on the 27 April 2005.
- 2 _____ ?
Over ten years.
- 3 _____ ?
Six billion pounds.
- 4 _____ ?
Because it has never had any direct competition.
- 5 _____ ?
Dominating the market for years to come.
- 6 _____ ?
Over 300 planes a year.

7 Match these words with their definitions.

- | | |
|-----------------|--|
| 1 superseded | a <input type="checkbox"/> documents of the best performance, product etc. |
| 2 assembly | b <input type="checkbox"/> the first time a plane flies |
| 3 record books | c <input type="checkbox"/> taken the place of something older |
| 4 engineers | d <input type="checkbox"/> the parts of which something is made |
| 5 congestion | e <input type="checkbox"/> transported by sea |
| 6 maiden flight | f <input type="checkbox"/> the act of putting something together |
| 7 components | g <input type="checkbox"/> people whose job is to design and build machines etc. |
| 8 shipped | h <input type="checkbox"/> when something cannot move because it is too full |

8 Refer to the text and match operations and pictures.

- 1 Construction of the building site where the fuselage will be assembled.
- 2 Fabrication of different fuselage parts.
- 3 Multimodal transport to the assembly point.
- 4 Assembling the fuselage and wings.
- 5 Mounting the undercarriage.
- 6 Fitting the turbines.
- 7 Cabling and checking electronic instruments.
- 8 Moving to a different hangar for painting.
- 9 Engine testing and flight trials.



9 **4 Listen to this extract from the presentation of the Airbus A380 and fill in the gaps.**

Imagine a (1) _____ that holds almost six hundred people. Imagine a plane with (2) _____ for showers, shops and bars. Imagine a plane which could change air (3) _____ forever. Right now, that dream is coming true.

This is the story of a multi-billion pound gamble. A (4) _____ of high technology, big (5) _____, gigantic buildings, the creation of an airliner bigger, more powerful, more luxurious than anything ever seen: the (6) _____ A380.

Good afternoon ladies and gentlemen and welcome to the (7) _____ Paris Air Show. For people who build (8) _____ this is the most important event of the year. Businessman Charles Champion has the (9) _____ of the company known as Airbus on his shoulders.

10 In pairs, ask and answer the questions referring to the above extract.

- 1 How many people can the A380 carry?
- 2 At which airshow was the A380 shown for the first time?
- 3 In which year was the A380 first presented to the public?
- 4 Who was the A380 project manager?
- 5 What is the name of A380 company?

MY GLOSSARY

airliner /eəlaɪnə(r)/ _____
 cargo /kɑ:ɡəʊ/ _____
 cockpit crew /kɒkpi:t kru:/ _____
 deflect /dɪ'flekt/ _____
 drag /dræg/ _____
 flight trial /flaɪt traɪəl/ _____
 fuselage /'fju:zələ:ʒ/ _____
 hangar /hæŋɡə(r)/ _____
 landing gear /'lændɪŋ ɡɪə(r)/ _____
 lift /lɪft/ _____
 maximum landing weight /mæksɪməm 'lændɪŋ weɪt/ _____
 maximum takeoff weight /mæksɪməm 'teɪkɒf weɪt/ _____
 maximum zero-fuel weight /mæksɪməm 'zi:əʊfjuəl weɪt/ _____
 pitch /pɪtʃ/ _____

plane maker /pleɪn 'meɪkə(r)/ _____
 to protrude /tə prə'tru:d/ _____
 propeller /prə'pelə(r)/ _____
 range, fully loaded /reɪndʒ 'fʊli 'ləʊdɪd/ _____
 rear /rɪə(r)/ _____
 roll /rɒl/ _____
 rounded /raʊndɪd/ _____
 rudder /'rʌdə(r)/ _____
 tail /teɪl/ _____
 tapered /teɪpəd/ _____
 thrust /θrʌst/ _____
 tilt /tɪlt/ _____
 turbine /tɜ:bain/ _____
 undercarriage /'ʌndəkæərɪdʒ/ _____
 yaw /jəʊ/ _____

6

Are You in Command?

1 Match the following names with the correct pictures. Then read the text and check.

1 cab

2 cockpit

3 bridge

4 cabin



Each form of transport has its own particular area from where the driver controls the vehicle's movements. In a car the driver sits at the wheel for example. But the names we give to this area change from one form of transport to the other. The captain of a ship controls the vessel from the bridge, a lorry driver sits in a cabin, a pilot in a cockpit or flight deck, and a train driver in a cab.

2 Read the text and answer the questions.

The Cockpit

A cockpit or flight deck is the area, usually near the front of an aircraft, from which a pilot controls the aircraft. Most modern cockpits are enclosed, except on some small aircraft, and cockpits on large airliners are also physically separated from the cabin. An aircraft is controlled both on the ground and in the air from the cockpit.

As a term for the pilot's compartment in an aircraft the term 'cockpit' first appeared in 1914. After 1935 cockpit was also used informally to refer to the driver's seat of a car, especially a high performance one, and this is official terminology in Formula One. The term is probably related to the sailing term for the coxswain's station in a Royal Navy ship, and later the location of the ship's rudder controls.

The cockpit of an aircraft contains flight instruments on an instrument panel, and the controls which enable the pilot to fly the aircraft. In most airliners, a door separates the cockpit from the passenger compartment. After the terrorist attacks of 11 September 2001, all major airlines fortified the cockpit against access by hijackers.



- Where are cockpits usually located on aircraft?
- When was the term cockpit first used for aviation?
- What does the term usually refer to on a road?
- What does it refer to on a ship?
- What type of instruments does the cockpit of an aircraft contain?
- Why is it separated by a door from the passenger compartment?

3 Match these words with their definitions.

- | | |
|------------|--|
| 1 cockpit | a <input type="checkbox"/> an airplane used for carrying passengers |
| 2 pilot | b <input type="checkbox"/> the place where instruments are mounted on |
| 3 airliner | c <input type="checkbox"/> the enclosed space in an aircraft for the crew and passengers |
| 4 cabin | d <input type="checkbox"/> the space in an airplane which contains the flying controls |
| 5 panel | e <input type="checkbox"/> the person who operates an aircraft in flight |

4 In pairs, look at these words. Can you find their synonyms in the text?

- | | | | |
|------------|-------|-----------|-------|
| 1 space | _____ | 4 section | _____ |
| 2 airplane | _____ | 5 command | _____ |
| 3 land | _____ | | |

5 Provide at least one question for each of the paragraphs describing the common flight instruments. The first one is done for you.



Altimeter. The altimeter shows the aircraft's altitude above sea-level. A pressure altimeter, or barometric altimeter, is used by pilots to measure their elevation.

What does the altimeter show?
What is its function?



Attitude indicator. The attitude indicator (also known as an artificial horizon) shows the aircraft's attitude relative to the horizon.

From this instrument the pilot can see if the wings are level and if the aircraft's nose is pointing above or below the horizon. This primary instrument is also useful in conditions of poor visibility.

1 _____ ?
2 _____ ?



Airspeed indicator. The airspeed indicator shows the aircraft's speed (usually in knots) relative to the surrounding air. The indicated airspeed must be corrected for air density (which varies with altitude, temperature and humidity) in order to obtain the true airspeed, and for wind conditions in order to obtain the speed over the ground.

1 _____ ?
2 _____ ?



Magnetic compass. The compass shows the aircraft's heading relative to Magnetic North. While reliable in steady level flight it can give confusing indications when turning, climbing, descending or accelerating due to the inclination of the Earth's magnetic field.

For this reason, the heading indicator is also used for aircraft operation.

1 _____ ?
2 _____ ?



Vertical speed indicator. The VSI senses changing air pressure, and displays that information to the pilot as a rate of climb or descent in feet per minute, metres per second or knots.

1 _____ ?
2 _____ ?



Turn indicator. The turn indicator displays the direction of turn and rate of turn. An internally mounted inclinometer displays the 'quality' of turn, i.e. whether the turn is correctly coordinated.

1 _____ ?
2 _____ ?



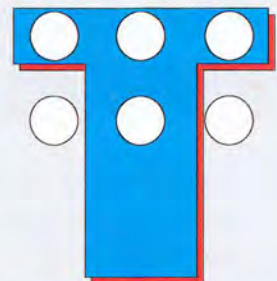
Heading indicator. The heading indicator (also known as the directional gyro, or DG; sometimes also called the gyrocompass, though usually not in aviation applications) displays the aircraft's heading with respect to Geographical North.

1 _____ ?
2 _____ ?

6 Read the text and label the picture, writing the numbers in the right circles, according to the description.

Most aircraft are equipped with a standard set of flight instruments which give the pilot information about the aircraft's attitude, airspeed and altitude. They have at least four of the flight instruments located in a standardised pattern called the T arrangement.

The attitude indicator (1) is in the top center, airspeed to the left (2), altimeter to the right (3) and heading indicator (4) under the attitude indicator. The other two, turn-coordinator (5) and vertical-speed (6), are usually found under the airspeed and altimeter.



- 7 Read the text and decide if these statements are true (T) or false (F).

The Bridge

The room from which a ship is commanded is known as the bridge. In this room there are usually three or more men working to control the ship's movements: the captain, an OOW – officer of the watch, an AB – able seaman, and a pilot. Like many other forms of transport, the direction of the ship is controlled by a steering wheel located on the bridge. The throttle – which provides the forward and backward movement of the vessel, is also controlled from this area. On all ships visibility is obviously very important, both for safe navigation and, in the case of warships, to be able to see the enemy. On most modern ships the bridge is in a high position and provides a near 360° view.

- 1 On a ship the 'bridge' is a type of room. _____
- 2 The direction of a ship is not controlled by a wheel. _____
- 3 The ship's throttle is controlled from a different area. _____
- 4 On warships visibility is important for two reasons. _____
- 5 From the bridge it is possible to see all around. _____

- 8 Find the synonyms of these words in the text.


- 1 controlled _____
- 2 positioned _____
- 3 vehicle _____

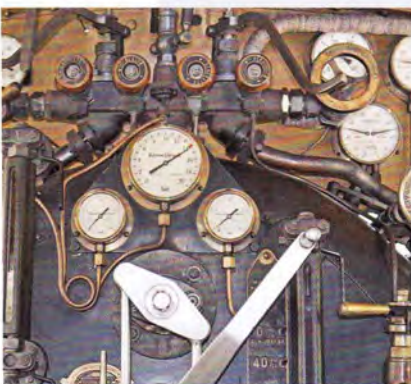
- 4 panorama _____
- 5 cruising _____

The Cabin

The cabin of a lorry is an enclosed space where the driver is seated. A sleeper (or sleeper berth or bunk) is a compartment attached to the cab where the driver can rest while not driving, sometimes seen in articulated lorries. Cabins have a few possible configurations:

- Cab over engine (COE), where the driver is seated on top of the front axle and the engine. Access to a COE cabin is commonly by steps near the front tyres.
- Conventional cabins are the most common in North America and Australia. The driver is seated behind the engine, as in most passenger cars or pickups. Access to a conventional cabin is commonly by steps at or near the fuel tank(s) behind the front tyres.
- Cabin beside engine designs also exist, but they are rather rare.

- 9  5 Listen to the description of a cab and complete the text.



The Cab

Propulsion for the train is provided by a (1) _____ locomotive, or by individual (2) _____ in self-propelled multiple units. Most modern trains are powered by (3) _____ locomotives or by electricity supplied by overhead wires or (4) _____ rails, although historically the steam locomotive was the dominant form of locomotive (5) _____.

The cab, crew compartment or driver's compartment is the part of the locomotive housing the (6) _____ and the controls necessary for the locomotive's operation. On steam locomotives, the cab is normally (7) _____ to the rear of the firebox. The cab of a diesel or electric locomotive is either (8) _____ a cabin or forming one of the structural elements of a cab unit locomotive.

- 10 In pairs, ask and answer the questions.

- 1 Would you like to become a driver?
- 2 Would you prefer to drive a lorry or a train? Why?
- 3 Which one of these two means of transport is the most difficult to drive according to you? Why?



11 Read the text and answer the questions.

The Signal Box

You are probably familiar with the small buildings standing next to railway lines, but possibly do not know what they are used for. These constructions are known as signal boxes or switch towers, and were fundamental for the development of the railway system. The signal box

was first used in the mid-19th century, and was a space for signalmen to control the direction of trains and ensure the safety of passengers and vehicles. At first, this job was carried out manually by moving levers to move the track, but with the invention of electrical and electronic technology, the signalman's job changed radically. First, he was able to control much larger areas of track from a control panel, and could communicate directly with trains by radio or telephone, and later he was able to perform all of these tasks by computer. Eventually, the signal box fell into disuse. Today most signaling is controlled centrally by very sophisticated computers, but for many years the simple signal box guaranteed safe rail travel all over the world; and perhaps many of these little buildings still exist to remind us of their important role in the development of the railway system.

- 1 What was the purpose of the signal box?
- 2 What innovations changed the job of the signalman?
- 3 How did the signalman communicate with trains?
- 4 Why are signal boxes no longer in use?
- 5 Why do signal boxes still exist?

12 Match these words with their definitions.

- | | |
|-----------------|--|
| 1 switch points | a <input type="checkbox"/> protection from danger |
| 2 heritage | b <input type="checkbox"/> long handles used to operate machinery |
| 3 safety | c <input type="checkbox"/> pieces of railway line that can be moved to change the direction of a train |
| 4 control panel | d <input type="checkbox"/> the history and traditions of a country |
| 5 levers | e <input type="checkbox"/> a flat board on machinery containing instruments |

The Signal Box Inn

In the Cleethorpes region of Great Britain, there is a very unusual signal box that is now used for something completely different. The Signal Box Inn is a pub; in fact, at only 6 m², it is in the Guinness Book of Records as the smallest pub in the world, with room inside for only 6 people! Although it is very small it serves 5 types of beer and cider and some food. The best place to enjoy your drink while you watch steam trains go by is in the pub's beer garden.



MY GLOSSARY

airspeed indicator /ˈeəspi:d ˈɪndɪkeɪtə(r)/ _____
 altimeter /ˈæltɪmi:tə(r)/ _____
 attitude indicator /ˈættɪtju:d ˈɪndɪkeɪtə(r)/ _____
 axle /æksl/ _____
 berth /bɜ:θ/ _____
 bunk /bʌŋk/ _____
 coxswain /ˈkɒksn/ _____
 enable /rɪneɪbl/ _____
 flight deck /flaɪt dek/ _____

heading indicator /ˈhedɪŋ ˈɪndɪkeɪtə(r)/ _____
 hijacker /ˈhaɪdʒækə(r)/ _____
 rudder /ˈrʌdə(r)/ _____
 signal box /ˈsɪgnəl bɒks/ _____
 steam /sti:m/ _____
 steering wheel /stiəriŋ wi:l/ _____
 throttle /θrɒtl/ _____
 track /træk/ _____
 turn indicator /tɜ:n ˈɪndɪkeɪtə(r)/ _____

7

Positioning Tools

1 Read the text and answer the questions.

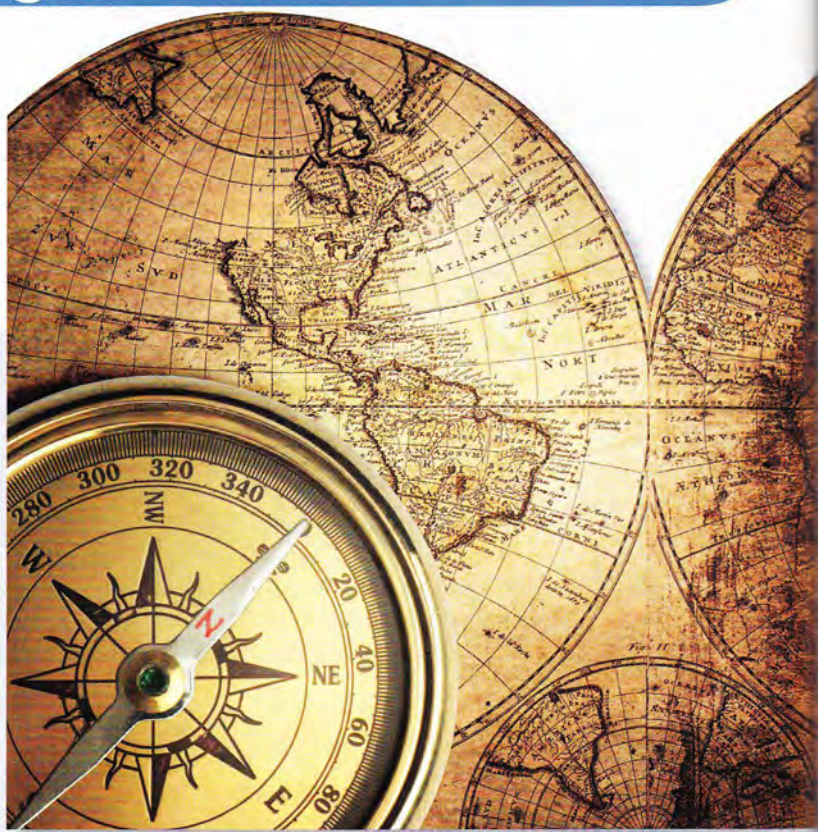
From using the sun, the moon and the stars to the development of compasses and maps and in very recent times the technology of satellite GPS systems and radar, man has always needed a way to find his bearings, whether travelling on foot, at sea or in the air. Navigation is as fundamental for humans today as it was in the past, and with all the sophisticated technology now available navigation tools are not just used to stop people getting lost.

Consider the transport industry for example. A GPS tracking system on a truck can ensure that a driver takes the

best route – avoiding traffic, saving time and petrol costs – but it also helps the transport company to monitor the driver and ensure that he respects the speed limits, only travels at the permitted times and rests at regular intervals for the required amount of time, respecting the law and increasing safety. It can even allow the company to find the vehicle in case of theft!

You have probably used maps on the internet or your mobile phone, and have seen how satellite images can now identify places with incredible detail, even looking into your living room from the sky above! This can be useful for planning a trip before you leave or finding a friend's house; but the technology is also used for a whole series of professional purposes: from calculating weather to urban planning and even security and warfare.

Like all forms of technology the GPS has a few disadvantages of course – it is not always 100% reliable – the suggested route may not always be the best, because some problems are not signaled or the information transmitted to the map is not completely accurate; and some people consider that GPS is an invasion of their privacy. However, this technology is obviously here to stay, and destined to improve; and, if used properly, its advantages are clearly greater than its drawbacks.



- 1 What tools did man use for navigating before the invention of satellite technology?
- 2 How can GPS systems help truck drivers?
- 3 Name some of the legal advantages of GPS for the transport industry.
- 4 What example is given of the accuracy of satellite images?
- 5 Why do some people not like this technology?

2 Match these words with their definitions.

- | | |
|-------------|---|
| 1 bearings | a <input type="checkbox"/> disadvantages |
| 2 tracking | b <input type="checkbox"/> methods of fighting war |
| 3 safety | c <input type="checkbox"/> direction from a fixed point, e.g. using a compass |
| 4 theft | d <input type="checkbox"/> protecting things and people from danger |
| 5 security | e <input type="checkbox"/> the crime of stealing things |
| 6 warfare | f <input type="checkbox"/> following the movements of something |
| 7 drawbacks | g <input type="checkbox"/> not being in danger |

3 Read the text and answer the questions.

The Radar

The word RADAR stands for Radio Detection and Ranging. It is a technology which was properly used for the first time during the Second World War by the allied troops against the Germans.

Basically, a radar is an anti-collision tool and can measure the bearing and the distance of a selected target. It is therefore a vital aid on ships and airplanes, especially in case of low or blind-visibility navigation.

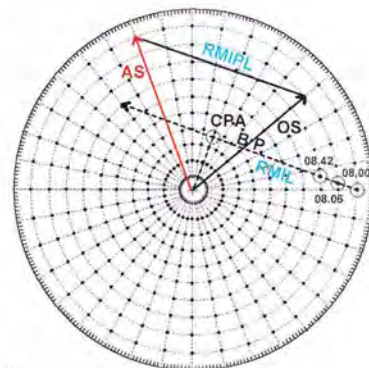
To detect a target's position the radar dish or antenna sends out pulses of electromagnetic waves. When these waves hit the target their echo is returned to the aerial and transformed into visual signals shown on a screen called PPI (Plan Position Indicator) or display. The capacity of the antenna to concentrate the irradiation energy in the dish is called gain. The whole process is based on the principle that radio waves bounce off solid surfaces. It is therefore possible to determine the bearings and distances of far away targets and deduce information about potential hazards. The Radar can also be used to find out the position of a ship at sea, but only in the case in which a fix (a fixed point of reference on the land) is available. For this, other more precise, handy and faster tools, like the GPS, are used.



- 1 What does the word Radar mean?
- 2 When was it properly used for the first time?
- 3 What type of wave does it make use of?
- 4 What is the working principle of the radar?
- 5 Can you define the term 'gain'?
- 6 What is a fix?

4 Look at the chart and match the following acronyms with their definitions.

Radar plotting is the set of calculations and graphics of naval kinematics. They are used to trace the positions of moving targets detected by the radar. This is a plotting chart paper filled in with data by a student.



Acronym

- 1 R.M.I.L.
- 2 R.M.P.I.L.
- 3 O.S
- 4 A.S.
- 5 C.P.A.
- 6 B.P. (Bow Passage)

Definitions

- a Own Ship
- b Close Point of Approach
(the point in which the two ships will be nearest)
- c Another Ship
- d Relative Motion Indicator Parallel Line
- e Point in which A.S. passes in front of O.S.'s bow
- f Relative Motion Indicator Line

5 Listen to this extract about the radar history and complete the text.

We see everything because of reflected (1) _____. Radar is a beam, not of visible light, but of a related form of (2) _____: microwave radiation. When an invisible beam of microwaves is directed outwards and something crosses its path, a little of the microwave energy is bounced back to its (3) _____. The time it takes a pulse of microwave energy to travel out and be (4) _____ back, allows us to understand the distance from the object being tracked. The (5) _____ of the returning energy, coming back to the radar, gives the (6) _____ of the object. In 1935 Nazi dictator Adolf Hitler announced the rebirth of the German Air Force, the Luftwaffe. Anxious to protect their cities from the threat of German bombing, the British Government commissioned the Scottish radio (7) _____ Robert Watson Watt to investigate the possibility of creating a death ray to shoot down Nazi aircrafts. Watson Watt took the ideas for a death (8) _____ and turned them into the world's first practical radar system. Radar stands for Radio direction and ranging. Before 1935 radars were (9) _____ and could only detect very large objects like a ship. In that year, Robert Watson Watt made a crucial breakthrough. He devised a radar that could spot something as small as an (10) _____, applying scientific principles already well understood at the time.

6 Read the text and choose the best title for each paragraph.

- | | |
|-----------------------------------|--------------------------------------|
| 1 History of the GPS | 3 The meaning and functioning of GPS |
| 2 Function of the ground stations | 4 GPS satellites |

The GPS System

- A GPS, which stands for Global Positioning System, is a radio navigation system belonging to the American Ministry of Defense, that allows land, sea, and airborne users to determine their exact location, velocity, and time 24 hours a day, in all weather conditions, anywhere in the world.
- B The complete name of the system is NAVSTAR GPS, which means 'Navigation Satellite Timing And Ranging Global Positioning System'. It was born as a top secret project of the American Department of Defense during the final years of the Cold War so initially it was intended just for military purposes.
- C Today the GPS service is provided free of charge by the United States Air Force to the entire world. It is a constellation of satellites (21 active and 3 spare ones) orbiting at 11,000 nautical miles above the Earth and a series of ground stations that control and monitor those satellites. The satellites are spaced so that from any point on Earth, four satellites will be above the horizon.
- D On the ground, any GPS receiver contains a computer that 'triangulates' its own position by getting bearings from three of the four satellites. The result is provided in the form of a geographic position – longitude and latitude – for most receivers, within a few metres. If the receiver is also equipped with a display screen that shows a map, the position can be shown on the map. When a fourth satellite can be received, the receiver/computer can calculate the altitude as well as the geographic position. If you are moving, your receiver may also be able to calculate your speed and direction of travel and give you estimated times of arrival to specified destinations.



7 Decide if these statements are true (T) or false (F). Correct the false ones.

- The GPS system is the property of each country in which it is used.
- The GPS system cannot be used in the air.
- At the beginning it was used as a military tool.
- The use of the GPS system is free.
- The GPS system is made up of more than 20 satellites.

8 Write the translation of the following words and expressions in your language.

- radio navigation system
- location
- provided
- ground stations
- equipped

9 In pairs, look at the picture then ask and answer the questions.

- How many satellites is the GPS appliance currently receiving?
- What is the speed of the vehicle?
- What is its final destination?
- What is its next foreseen change of direction?
- How long will it take?



10 7 Listen and complete the text with the missing numbers.

You know that incredibly uncomfortable feeling you get when you realise you are totally lost, for example in the woods or on the open ocean or in an unfamiliar city. With the global positioning system you can know exactly where you are, anywhere on the planet. All you need is a small hand-held receiver.

The system that makes it work is absolutely amazing. There are (1) _____ GPS satellites in orbit. They fly at an altitude of (2) _____ miles and there are always (3) _____ or (4) _____ of them overhead at any time. To find your location your receiver calculates exactly how far away it is from at least (5) _____ overhead satellites.

Then it uses a little trigonometry. If you intersect (6) _____ spheres you get a circle. If you intersect (7) _____ spheres you get (8) _____ points. The Earth is a sphere. So if you have only (9) _____ satellites you can use the Earth as (10) _____ of the spheres.

Since most GPS receivers have maps built in, you can use your longitude and latitude to find your way out of the woods, to the shore or to your favourite restaurant.

Focus on Sayings

11 Write a short and simple explanation for each of the following proverbs. The first one is done for you.

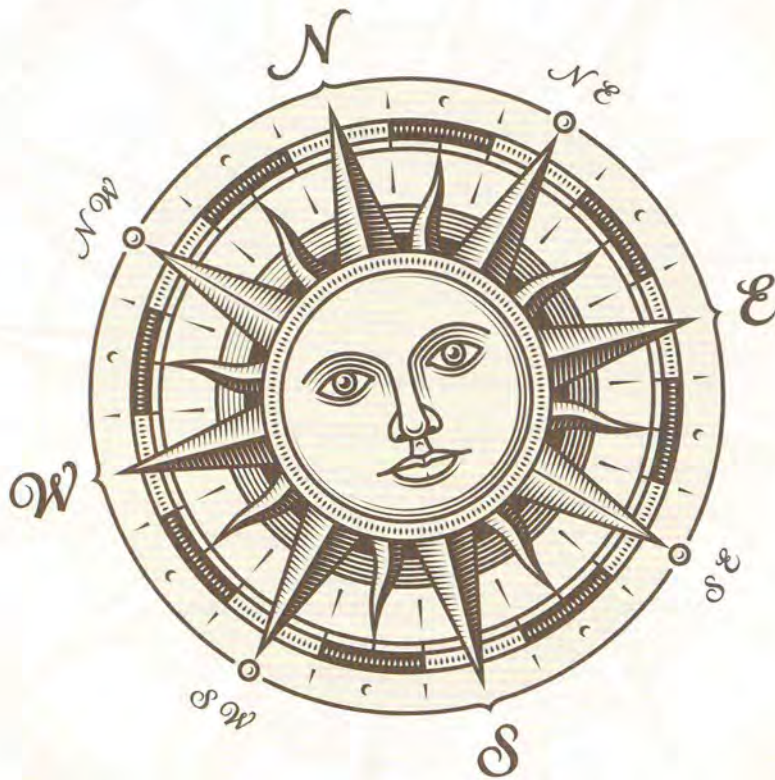
- 1 Check the course first and then loosen the sails.

The first proverb means that before sailing you must check your direction and destination carefully.

- 2 If there is snow, mist or thick fog, be careful and slow and listen to signals.

- 3 We've been beneath the radar all year.

- 4 It is certainly on our radar for priority.



MY GLOSSARY

aerial /ə'riəl/ _____
 beam /bi:m/ _____
 bounce off /baʊnts ɒf/ _____
 bow /bəʊ/ _____
 bow passage /bəʊ 'pæsɪdʒ/ _____
 build in /bɪld ɪn/ _____
 compass /kəm'pæs/ _____
 course /kɔ:s/ _____
 fix /fiks/ _____
 gain /geɪn/ _____
 hand-held /hænd'held/ _____

hazard /hæzəd/ _____
 kinematics /kɪn'mætiks/ _____
 law /lɔ:/ _____
 microwave /maɪkrəweɪv/ _____
 plotting chart paper /plɒtɪŋ tʃɑ:t 'peɪpə/ _____
 pulse /pʌls/ _____
 radar plotting /reɪdɑ:r plɒtɪŋ/ _____
 reliable /rɪ'laɪəbl/ _____
 screen /skri:n/ _____
 spot (v) /spɒt/ _____
 target /tɑ:ɡɪt/ _____

8

What's the Weather Like?



Of all human activities, transport is probably one of the most influenced by the weather. From deciding whether or not to go for a walk in the park to cancelling or delaying intercontinental passenger flights, the weather influences our movements all the time. Extreme weather conditions can cause accidents, death and destruction so predicting the weather is a priority when people and goods are moved from one place to another. Today man has developed some very sophisticated means for predicting the weather, but despite this, our predictions are not always accurate because weather conditions can change very suddenly.

1 Label the key of the weather forecast map.

- 1 cloudy
- 2 sunny
- 3 rainy
- 4 thunderstorms
- 5 snow
- 6 partially cloudy
- 7 frosty



2 In pairs, ask and answer the questions about the weather forecast in the map above.

- 1 What is the weather going to be like in Northern Italy?
- 2 Which is the hottest part of the area?
- 3 Which is the coldest part of the area?
- 4 Where is there an area of high pressure?
- 5 Where are there going to be thunderstorms?
- 6 Describe the temperature and general conditions of Great Britain.

3 Now label these weather forecast symbols with the expressions from the box.

wind direction wind force marine forecast maximum temperature minimum temperature



1 _____



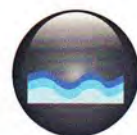
2 _____



3 _____



4 _____



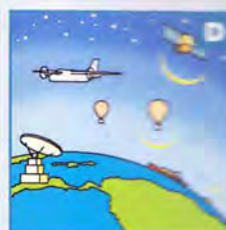
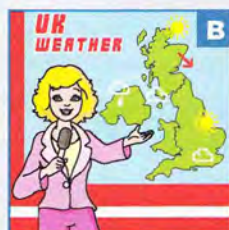
5 _____

4 Listen and complete the table with the correct information.

	Weather	Pressure	Wind Direction	Wind force
Tonight		Low 59		10 to 20 mph
Saturday morning				15 to 25 mph
Saturday night		Low 44	/	/

5 Read the text and match the paragraphs with the correct pictures.

- 1 Have you ever been in a situation when the weather forecast predicted sunny skies, but then it rained all day? You think: 'Oh no, I wish I had my umbrella!'
- 2 The job of predicting weather accurately is a difficult one, because our atmosphere is constantly changing. Weather forecasters must analyse information they receive from a number of sources, including mobile weather observers, weather balloons, weather stations and satellites.
- 3 NASA uses a series of satellites called the Afternoon Constellation, nicknamed the 'A-Train', which are orbiting in air and are collecting all sorts of data, including those that will help predict weather and climate changes.
- 4 Two additional satellites, Cloudsat and Calipso, will soon be launched to extend the series. Cloudsat will help improve weather forecasting, by studying the different aspects of clouds, as its name implies. Calipso will help predict climate change and how aerosols or particles affect the Earth's atmosphere.
- 5 We rely on weather predictions for many activities:
 - farmers need to know the best time to plant and harvest their crops;
 - airplanes take-offs, landings and flight plans are scheduled according to local weather conditions;
 - weather forecasters warn newspapers about severe storms that could endanger life or property.



Most people want to know what the weather will be like as they go to and from work or school, or plan outdoor activities; but although we receive weather data from such a great variety of sources, we know that it is still impossible to predict the weather accurately 100% of the time.

6 Read the text again and answer the questions.

- 1 Why is it so difficult to predict the weather?
- 2 Where do weather forecasters get their information?
- 3 Where is the 'A-train' and what does it do?
- 4 Why are two new satellites being launched?
- 5 What do farmers need the weather forecast for?

7 Find the synonyms of these words in the text.

- | | |
|--------------------|-------------------|
| 1 precisely _____ | 5 depend on _____ |
| 2 interpret _____ | 6 serious _____ |
| 3 group _____ | 7 planned _____ |
| 4 predicting _____ | |

8 **9 Listen to the question 'What's the weather like today?' and fill in the table with as many adjectives as you can.**

Sight	Touch/Feeling	Temperature	Opinion
<i>cloudy</i>	<i>windy</i>	<i>cool</i>	<i>wonderful</i>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

9 Read the text and answer the questions.

Severe Weather Conditions Can Be Dangerous for Aircraft



Ice buildup on the wings, tail and stabilisers of an aircraft may be very dangerous, because it can change the way air flows around them, slowing the plane and compromising the wings' ability to lift the plane as it moves forward.

Two different processes are used to try and solve this problem: de-icing and anti-icing.

De-icing is the removal of existing snow, ice, frost, etc., from a surface.

Anti-icing is the application of chemicals that not only de-ice, but remain on a surface and continue to delay the reformation of ice up to a certain period of time, or prevent adhesion of ice to make mechanical removal easier.

Frost, ice or snow on critical surfaces of an aircraft such as wings, propellers and stabilisers can have a significant

impact on the operation of an aircraft. The aircraft can be affected in two ways:

- the formation of frost, ice or snow changes the airflow over the wing, reducing lift and increasing drag;
- the additional weight of the ice or snow adds to the total weight of the aircraft, increasing the lift required for the aircraft to take off. The combination of reduced lift, increased drag and increased weight from even small quantities of ice, snow or frost, can affect performance and handling, which can have dramatic consequences.

De-icing is performed by spraying heated Type 1 glycol aircraft de-icing fluid (ADF) on frost, snow and ice to melt and remove them from the critical surfaces. If precipitation continues after the Type 1 application, then a non-heated Type 4 glycol aircraft anti-icing fluid (AAF) application is necessary to prevent further build-up before take-off.

- 1 Why can ice building up on aircraft parts be dangerous?
- 2 What action can be taken against ice building up on aircrafts?
- 3 In what ways can ice building affect the aircraft?
- 4 How is de-icing carried out?
- 5 When is AAF used?

10 Complete these sentences with information from the text above.

- 1 When ice forms on an aircraft it can change the way the air flows around the _____, _____ and _____.
- 2 When the airflow over the plane's wing is changed by ice it _____ drag and _____ lift.
- 3 When the total weight of an aircraft is increased by the presence of ice it means that _____.
- 4 The difference between the two safety procedures applied in these conditions is that _____.

11 Match these words with their definitions.

- | | |
|---------|--|
| 1 ice | a <input type="checkbox"/> a powered, fixed-wing aircraft |
| 2 plane | b <input type="checkbox"/> a solid deposit of water vapour |
| 3 snow | c <input type="checkbox"/> liquid that continually flows |
| 4 frost | d <input type="checkbox"/> water frozen into a solid state |
| 5 fluid | e <input type="checkbox"/> small, soft, frozen water that falls from the sky |



Focus on Sayings

12 Match these English weather proverbs with their explanations.

- | | |
|---|--|
| <p>1 Red sky at night, sailor's delight:</p> <p>2 Clear moon, frost soon:</p> <p>3 Rainbow in the morning gives you fair warning:</p> <p>4 Lightning never strikes the same place twice:</p> <p>5 Halo around the sun or moon, rain or snow soon:</p> <p>6 Red sky in the morning, sailor take warning:</p> | <p>a <input type="checkbox"/> a red sky during sunrise indicated that a storm was possible.</p> <p>b <input type="checkbox"/> apparently this one means there is a shower to the West on its way.</p> <p>c <input type="checkbox"/> when the sky is red at sunset good weather is predicted for the following day.</p> <p>d <input type="checkbox"/> apparently the halo or ring indicates moisture in the upper atmosphere, so it was thought that moisture was on its way down in the form of precipitation.</p> <p>e <input type="checkbox"/> a false myth states that lightning never falls a second time in the same place.</p> <p>f <input type="checkbox"/> when there is no cloud cover at night the air temperature will cool more quickly, hence greater chance of frost in the morning.</p> |
|---|--|



- 13** In pairs. Do you know any other proverbs related to weather? Write them in your language then try to translate them into English, maintaining rhymes when possible. Use a dictionary and ask your teacher for help.

MY GLOSSARY

aerosol /eə'rəʊsəl/ _____

affect /ə'fekt/ _____

anti-icing /ænti'aɪsɪŋ/ _____

build-up /bɪldʌp/ _____

crop /krɒp/ _____

de-icing /di'aɪsɪŋ/ _____

delay (v) /dɪ'leɪ/ _____

glycol /glɪkəl/ _____

harvest (v) /hɑ:vɪst/ _____

melt /melt/ _____

nickname (v) /nɪkneɪm/ _____

particle /pɑ:tɪkl/ _____

rely on /rɪ'laɪ ɒn/ _____

scheduled /'fedʒu:ld/ _____

warn /wɔ:n/ _____

weather balloon /weðə(r) bə'lu:n/ _____

weather forecast /weðə(r) 'fɔ:kɑ:st/ _____

9

Intermodal Freight Transport

Transport is everywhere! In the air, by rail or road, on the water, by cable or pipeline and even in space – people, animals and goods are constantly on the move. Transport is fundamental both for trade between people and for establishing cultural exchanges and increasing understanding between different cultures. As a field of study transport can be divided into three categories: infrastructure, vehicles, and operations. Infrastructure for transport is all around us – from airports, railway and bus stations to warehouses, trucking terminals, refueling depots and seaports. Vehicles include automobiles, bicycles, buses, trains, trucks, people, ships, helicopters and airplanes. Operations deal with the way the vehicles are operated, and the procedures set for this purpose, including financing, legalities and policies. Passenger transport may be public or private. Freight transport is today focused on containerisation. Transport plays an important part in economic growth and globalisation, but can also cause air pollution and use large amounts of land. It is commonly heavily influenced by governments, both in terms of subsidies and planning, which is essential to make traffic flow and control urban sprawl.



1 Read the text and answer the questions.

- 1 What are the most common forms of transport?
- 2 Why is transport so important?
- 3 What are the most common forms of infrastructure for land-based transport?
- 4 Which category of transportation controls its regulations?
- 5 Name two problems that can result from the transport industry.
- 6 What areas do governments need to influence in the transport industry?

2 Match these words with their definitions.

- | | | |
|--------------------|----------------------------|---|
| 1 cable | a <input type="checkbox"/> | the systems and services necessary for a country to function well |
| 2 goods | b <input type="checkbox"/> | a place where goods are stored |
| 3 infrastructure | c <input type="checkbox"/> | issues connected with the law |
| 4 depots | d <input type="checkbox"/> | thick, strong metal rope or wire |
| 5 legalities | e <input type="checkbox"/> | the process of transporting goods in enormous boxes |
| 6 containerisation | f <input type="checkbox"/> | to move smoothly and constantly |
| 7 subsidies | g <input type="checkbox"/> | products destined for sale, carried by truck, plane or ship |
| 8 flow | h <input type="checkbox"/> | money that governments give to help organisations |


3 The following table summarises the CO₂ emission factors by freight transport mode, established by Essen in 2003. Match transport modality and green tonality. Which is the greenest means of transport? Which is the most polluting one? Write a short paragraph to summarise these data.

	Modality	CO ₂ emission g-t/km (expressed in grams CO ₂ per ton-kilometre)		
1	Articulated lorry	60-80	A	
2	Lorry 10-20 Tons (local delivery)	120-150	B	
3	Electric Train	30-40	C	
4	Diesel electric train	35-45	D	
5	Ship 250-1000 tonnes	35-70	E	
6	Ship 1000-3000 tonnes	30-55	F	






CO₂ emission factors by freight transport mode (Essen et al., 2003)

Air Freight

Today an increasing number of goods are transported by air. Planes can transport letters, cars and even horses as well as other planes! Virtually every passenger flight also transports cargo, and of course many flights are for the transportation of goods only. The planes used may be similar to passenger planes or are sometimes old passenger planes which have been converted for goods transportation, or they may be cargo aircraft, some of which are enormous. The Boeing 747-400, for example, can transport the same quantity of goods as 5 articulated lorries! But there is yet another category of plane which was developed exclusively for cargo: the super transporter. The largest of these, the Antonov AN-225, can carry over 250 tons of cargo!

4  10 Complete the table referring to the text above with the words from the box. Then listen and check.

Russia Europe two Super Guppy four USA four Antonov four
 Airbus six 747 Dreamlifter USA 124 Antonov

		Aircraft and company name	Number of engines	Country
1		Beluga, _____	_____	_____
2		Nasa Aero Space lines	_____	_____
3		Boeing _____	_____	_____
4		_____	_____	Russia
5		225 _____	_____	_____

5 Read the text and choose the best title for each paragraph (A-D).

- | | |
|--|--|
| 1 Description of the main activities of a freight village. | 3 Final statement on a freight village. |
| 2 Introduction to the concept of freight village. | 4 Extra information on freight villages. |

Intermodal Freight Transport

- A A freight village is a complex set of facilities where all the activities relating to transport, logistics and distribution of goods are carried out on a commercial basis by various operators, who can either be the owners or the tenants of the spaces (warehouses, storage areas, offices, car parks etc.). It must be equipped with public facilities and, if possible, include public services for the staff and users. Other names for a freight village are: logistics park/centre, transport centre or logistics hub.
- B A freight village enables change from one given transport mode to another (modal shift) through a set of technologies that facilitate the transfer. It is served by several transport modes (road, rail, deep sea, inland waterway, air) to encourage intermodal transport for the handling of goods. The most common examples of modal shifts are: train (rail) to lorry (road); barge (inland waterway) to train or lorry; airplane (air) to lorry.
- C A freight village requires different activities such as warehousing, economic activities, support activities, unified management. The warehouse is the infrastructure where the transport operator mostly performs his business. This activity may include the division of the goods into smaller quantities for a more functional distribution. Logistics hubs need active distribution centres and several industrial activities in the neighbourhood that can exploit the modal shift facilities within the village. Support activities include support services like lorry rest areas, office space, restaurants, banking, shops and hotels. Unified Management requires that the village is often under the management of a single entity.
- D A freight village is the right solution to satisfy the increasing requirements of a complex business based on transport. In order to work well it is imperative that the village is run by a single body, either public or private.



6 Read the text and write T (True), F (False) or DS (Doesn't say).

- A freight village is also called a logistics hub.
- A modal shift train to airplane is not possible.
- In the warehouse goods are usually assembled in bigger quantities.
- In a freight village there are never banks or restaurants.
- A freight village is usually run by a single person.

7 Match the following modal transport shifts with the right pictures.

- | | |
|----------------------|---------------------|
| 1 Ship to lorry | 3 Train to lorry |
| 2 Lorry to warehouse | 4 Airplane to lorry |

A



B



C



D



8 Read the text and answer the questions.



Oil tankers

The oil tanker was developed in the late 19th century as a solution for transporting large quantities of 'black gold' across the globe. Today, oil tankers fall into two basic categories, crude tankers and product tankers. Crude tankers are the larger of the two. They move raw, unrefined oil from the places where it's pumped out of the earth, to the refineries where it is processed into fuel and other products. Product tankers, on the other

hand, are smaller than crude tankers and move already-processed petroleum products to markets where they can be sold and used. Corporations are always seeking the most efficient way to accomplish a task in order to maximise profits. Due to their immense size, oil tankers provide an easy and inexpensive way to transport oil over long distances. In fact, it only costs around two to four cents per gallon to transport oil using a typical tanker. Like many other influential technologies, oil tankers have helped us progress as a civilisation, but they have also presented us with considerable problems. Without oil tankers, it would be impossible to travel as easily and often as we do. However, some of the worst man-made environmental disasters in history have resulted from oil tanker accidents. When oil spills into the sea it creates enormous damage to nature, which takes many years to recover. In order to prevent these accidents occurring again in the future new regulations have been introduced. For example, new oil tankers must be double-hulled, which means that there are two layers separating the oil they carry from the sea. This reduces the risk of oil spills in case the tanker has an accident, but of course it does not eliminate risk completely. Sea transportation of oil also carries other risks, including pirates, who take control of the tanker and demand money in return. The future of oil tankers is also uncertain, just as the future of the oil industry itself is. Man is looking for new ways of producing energy as oil reserves are finishing and ecological issues are becoming more important.

- 1 Why were oil tankers developed?
- 2 What is the main difference between the two types of oil tanker?
- 3 What are the main advantages of oil tankers as a form of transportation?
- 4 What are the main disadvantages?
- 5 Why is the future of oil tankers uncertain?

Focus on Sayings

9 In pairs, match these English proverbs with their definitions, then discuss their meaning. Do you agree with them? Why? Why not?

- 1 The cleanest journey is the one that does not take place.
 - 2 The pilot who teaches himself has a fool for a student.
 - 3 Everywhere is within walking distance if you have the time.
- a If you are patient you can always travel from one place to another.
 - b Every form of transport creates pollution in some way.
 - c It is impossible to learn to fly a plane without help from someone else.

MY GLOSSARY

crude tanker /kru:d 'tæŋkə(r)/ _____
 deep sea /di:p si:/ _____
 double-hulled /dʌblhʌld/ _____
 environmental /ɪnvaɪərən'mentl/ _____
 exploit /ɪk'splɔɪt/ _____
 freight village /fret 'vɪlɪdʒ/ _____
 facility /fə'sɪlɪti/ _____
 freight /fret/ _____
 growth /grəʊθ/ _____
 handling /hændlɪŋ/ _____
 hub /hʌb/ _____
 inland waterway /ɪnlənd 'wɔ:təweɪ/ _____
 light subway /laɪt 'sʌbweɪ/ _____
 modal shift /mɔ:dl ʃɪft/ _____

neighbourhood /neɪbəhʊd/ _____
 oil tanker /ɔɪl 'tæŋkə(r)/ _____
 rail /reɪl/ _____
 raw /rɔ:/ _____
 pipeline /paɪpləm/ _____
 process /prəʊses/ _____
 refuel /ri:'fjuəl/ _____
 spill /spɪl/ _____
 storage area /stɔ:ɪrɪdʒ 'eəriə/ _____
 trade /treɪd/ _____
 unrefined /ʌnrɪ'faɪnd/ _____
 sprawl /sprɔ:l/ _____
 warehouse /weəhaʊs/ _____

1 Read the text and answer the questions.

Logistics and Warehouses

A warehouse is a commercial building for storage of goods.

Warehouses are used by manufacturers, importers, exporters, wholesalers, transport businesses etc. They are usually large plain buildings in industrial areas of cities, towns and villages, strategically positioned to be close to main transport facilities such as ports, roads, stations and rivers. They usually have loading docks to load and unload goods from trucks. Sometimes warehouses are designed for the loading and unloading of goods directly from railways, airports, or seaports. They often have cranes and forklift trucks for moving goods, which are usually placed on ISO standard pallets loaded into pallet racks. Stored goods can include any raw materials, packing materials, spare parts, components, or finished goods associated



with agriculture, manufacturing, or commerce. Organising a warehouse well is essential for efficient loading, storing and unloading of goods, as it saves time, space and therefore money. Over the last twenty years warehouses have changed a lot, mainly due to new technology and business demands. Modern warehouses are now almost fully automated – they require very few people to run them – and they employ 'Just in Time' techniques, so goods are never stored for very long, meaning savings in space and money.

- 1 Why is the location of a warehouse so important?
- 2 What type of equipment is commonly used in a warehouse?
- 3 Why is the organisation of a warehouse so fundamental?
- 4 What factors have caused warehouses to change in recent years?
- 5 What are the consequences of automation in a warehouse?

2 Match these words with their definitions.

- | | |
|------------------|---|
| 1 run | a <input type="checkbox"/> planned for a particular purpose |
| 2 pallet | b <input type="checkbox"/> a small, low platform where goods are placed for storage |
| 3 demands | c <input type="checkbox"/> keeping in a particular place for future use |
| 4 forklift truck | d <input type="checkbox"/> a small vehicle with two front prongs for lifting and moving goods |
| 5 strategically | e <input type="checkbox"/> people who sell large quantities of goods for resale |
| 6 wholesalers | f <input type="checkbox"/> another word for manage |
| 7 importers | g <input type="checkbox"/> a machine for lifting and moving heavy weights |
| 8 facilities | h <input type="checkbox"/> another word for requirements |
| 9 crane | i <input type="checkbox"/> people who bring goods into a country to sell them |
| 10 storing | j <input type="checkbox"/> things designed to offer a particular service |

3 Read the text and find the synonyms of the words below.

The term logistics is connected to the Greek word for logic and rationale, and it was first used with its current meaning of *organisation* in a military context. In the field of transportation logistics can be defined as 'the seamless movement of goods from supplier to consumer, accounting for all the transport, handling and storage requirements in between'. It includes operations such as exporting, packaging, marketing, freight forwarding, consolidating, tracking/monitoring, clearance and importing. As a result, freight logistics is a key competitive factor in business operations because it affects product quality, costs, profits, the ability to service customers and the ability to retain and expand market share.

- 1 managing _____
2 continuous _____

- 3 keep _____
4 increase _____

4 Read the text and choose the best title for each paragraph (A–D).

- | | |
|---------------------------------|---|
| 1 Recent changes | 3 Early developments |
| 2 Features common to all trucks | 4 Basic description of the forklift truck |

The Forklift Truck

- A What is smaller than a car, stronger than an elephant, can reach as high as a giraffe, works like an ox and never falls over? The forklift truck! Everybody has a vague idea of the existence of this humble little machine, but very few people ever think about how it works and how important it is to us. Invented nearly a hundred years ago, the forklift truck is used in just about every industry – without it we would not be able to manufacture or transport goods the way we do.
- B It was invented by a U.S. company in 1917 for internal use, but quickly became popular with the company's clients, who wanted one for themselves. In 1930 the pallet was standardised, which led to a great increase in demand for the truck; and in the 1950s warehouses started to develop vertically – so the forklift followed in the same direction and was redesigned to be able to lift pallets to a height of 15 metres!
- C There are in fact 7 different classes of forklift truck, mainly differentiated by their engines and tyres, but all forklifts share a series of common characteristics:
- frame, the foundation of all the forklift parts;
 - counterweight, used to stabilise the forklift when lifting heavy loads;
 - mast, hydraulically operated lift used to raise and lower a load;
 - forks, prongs that lift up a wooden pallet;
 - load back-rest, stops the load from shifting backwards;
 - overhead guard, protects the operator from a falling load.
- D The little truck has always been respected in industry for its resistance and versatility, but of course new technological progress has brought changes also to this machine: the 3 most significant of these are increased engine efficiency, making it more environmentally friendly; the arrival of the automated truck – controlled from a computer and no longer driven by an operator; and the 'sidewinder' forklift, which can move in any direction, and so also to places that were previously off limits for this type of vehicle. It will certainly see more changes in the future too, but we can be sure that this little work horse will still be a common site in industry for years to come.



5 Read the text again and complete these sentences.

- 1 Many more people wanted to use the forklift in the 1930s after _____.
- 2 The counterweight is fundamental for _____.
- 3 Protection for the operator is provided by _____.
- 4 The main characteristic of the automated truck is that _____.
- 5 The advantage of the 'sidewinder' is that _____.

6 Find the synonyms of these words in the text.

- | | |
|------------------------|--------------------|
| 1 unclear _____ | 3 remodelled _____ |
| 2 make, assemble _____ | 4 durability _____ |

7 Read the text and answer the questions.

The Organisation of an Airport



An airport is the location where aircraft take off and land, where goods, passengers and their baggage transit. Aircraft may be stored or maintained at an airport, where we usually distinguish two main parts: an air side and a land side. In the former we find all the infrastructures and services that serve to move aircraft, runways, taxiways, aircraft parkings, aprons and the air traffic control system; in the latter there are all the facilities and services associated with passengers such as the access to the airport, the terminal footpaths and the car parks. Gates are instead usually considered the border between the two areas.

The airport ramp or apron is the area where aircraft are parked, unloaded or loaded, refueled and boarded. The apron is not usually open to the general public and a license may be required to gain access.

The use of the apron may be controlled by the apron management service (apron control or apron advisory).

The apron is designated by the I.C.A.O. (International Civil Aviation Organization) as not being part of the maneuvering area. All vehicles, aircraft and people using the apron are referred to as 'apron traffic'.

In the USA, the words 'apron' and 'ramp' are used interchangeably in most circumstances. Generally, the preflight activities are carried out on ramps and areas for parking & maintenance are called aprons.

- 1 What are the two most important parts we can distinguish in an airport?
- 2 To which of these parts do gates belong?
- 3 How can you define an apron?
- 4 Who controls the apron?
- 5 What does the acronym I.C.A.O. mean?

8 Match the apron vehicles' names with the correct definitions.

Each airport, according to its size and needs, has a different number and types of apron vehicles. There are however some basic ones which every airport must have and that you may have seen many times.



1 Follow Me



2 Push Back



3 Airside Transfer Bus
(Apron Bus)



4 Loading Bridge
(Jet Bridge)



5 Baggage Dolly
(Pallet Dolly)



6 Passengers Boarding
Stairs

- a a movable staircase that passengers use to board or leave an aircraft
- b a heavy tractor used to move aircraft from their parking spaces before taxiing and taking off
- c a cart used to carry passengers' baggage and goods to the aircraft before taking off and from them after landing
- d they can be extra long and wide to hold the maximum number of passengers. They are usually fitted with minimal or no seating and with flashing beacons for operating airside near runways. They may also have driving cabs at both ends
- e a ground vehicle, such as a jeep, that meets a landing airplane to lead it to its parking place. The words 'follow me' usually appear on the rear of such vehicles
- f an enclosed, movable connector which extends from an airport terminal gate to an airplane, allowing passengers to board and disembark without having to go outside

9 Read the text about the port of Oslo and choose the best title for each paragraph (A–D).

- 1 The trend in ferry traffic
- 2 General description of the port of Oslo
- 3 Future development
- 4 Key issues for the expansion of the port

The Organisation of a Port

- A Oslo is Norway's busiest ferry port with four daily departures to Denmark and Germany. The ferries carry over 2.6 million passengers a year and 1.2 million tons of freight. The freight carried by these ferries constitutes a third of the general cargo handled by the port of Oslo.
- B Ferry traffic into and out of Oslo is expanding all the time with newer and ever larger ferries being taken into service.
- C This expansion makes it imperative for the port to have efficient, up to date terminal buildings and also adequate space for vehicle ferry lines and for customer facilities for disembarking vehicles. Container transport is an expanding segment of the port of Oslo.
- D The port currently has two container terminals, but development is underway to bring all container handling into one single terminal. When completed, this terminal will have a total quay length of 700 metres with a minimum water depth of 12 metres.



10 Find the synonyms of these words in the text.

- 1 full of people and goods _____
- 2 managed _____
- 3 important _____
- 4 modern _____
- 5 growing _____

11 Listen and complete the text. Choose the correct words from the box.

overseas sheds handling shuttle equipped fuel consumption increase

The terminals are (1) _____ with two gantry cranes each. Container (2) _____ at the terminal is carried out by straddle carriers and R.T.G. (rubber-tyred gantry) cranes. Most containers are (3) _____ cargo, but the volume of short-sea shipping containers is increasing. Forty-six thousand new cars are unloaded each year in the port of Oslo. There are two port (4) _____ for storage of new cars and unloading track for further distribution by rail with departures every day. The port of Oslo handles a large volume of dry bulk. An (5) _____ in construction work in the whole of Eastern Norway has resulted in heavy demand for cement and sand. The port has two quays for oil tankers. As much as forty per cent of Norway's (6) _____ of oil products is unloaded at Oslo and stored in storage units. Air traffic in Eastern Norway is also dependent on the port of Oslo, which receives all the jet (7) _____ used at Oslo's Gardermoen airport. The fuel is then freighted to the airport by a daily rail (8) _____.

MY GLOSSARY

- | | |
|-------------------------------------|---|
| apron /eɪprən/ _____ | quay /ki:/ _____ |
| back-rest /bækrest/ _____ | rack /ræk/ _____ |
| clearance /klɪərəns/ _____ | rail /reɪl/ _____ |
| customer /kʌstəmə(r)/ _____ | raw materials /rɔː mə'tɪəriəls/ _____ |
| ferry /feri/ _____ | saving /seɪvɪŋ/ _____ |
| fork /fɔːk/ _____ | share /ʃeə(r)/ _____ |
| forward (v) /fɔːwəd/ _____ | shed /ʃed/ _____ |
| frame /freɪm/ _____ | spare part /speə(r) pɑːt/ _____ |
| gantry crane /gæntri kreɪn/ _____ | straddle carrier /strædl 'kæriə(r)/ _____ |
| handle /hændl/ _____ | stroke /strʊk/ _____ |
| humble /hʌmbl/ _____ | supplier /sə'plɑː(r)/ _____ |
| mast /mɑːst/ _____ | track /træk/ _____ |
| overhead guard /əʊvəhed gɑːd/ _____ | tyre /taɪə(r)/ _____ |
| prong /prɒŋ/ _____ | |

11

Safety Procedures and Regulations

1 Write the translation of the following words and expressions in your language then read the text to learn more about safety legislation.

- 1 danger _____
- 2 workplace _____
- 3 guidelines _____
- 4 assessment _____
- 5 employer _____
- 6 worker _____
- 7 act _____
- 8 workstation _____
- 9 clothing _____
- 10 equipment _____
- 11 first aid _____
- 12 insurance _____



Safety Regulations and Legislation

In the field of transport and logistics, like in all areas of work, safety is a fundamental consideration. In all workplaces today there are guidelines to follow in order to avoid accidents, which explain what risks exist at work, their potential danger, and how to avoid them. Employers are obliged to inform their workers of these indications. The following is authentic information from European legislation:

- 1 Employers' Liability (Compulsory Insurance) Act 1969: this act requires employers to take out insurance against accidents and ill health to their employees.
- 2 Health and Safety (First Aid) Regulations 1981: they cover requirements for first aid.
- 3 The Health and Safety Information for Employees Regulations 1989: they require employers to display a poster telling employees what they need to know about health and safety.
- 4 Workplace Regulations 1992: they cover a wide range of basic health and safety issues such as ventilation, heating, lighting, workstations, seating and facilities.
- 5 Personal Protective Equipment at Work Regulations 1992: they require employers to provide appropriate protective clothing and equipment for their employees.
- 6 Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 (RIDDOR): they require employers to notify certain occupational injuries, diseases and dangerous events.
- 7 Provision and Use of Work Equipment Regulations 1998: they require that equipment provided for use at work, including machinery, is safe.
- 8 Management of Health and Safety at Work Regulations 1999: they require employers to carry out risk assessments and arrange for appropriate information and training.
- 9 Control of Substances Hazardous to Health Regulations 2002 (COSHH): they require employers to assess the risks from hazardous substances and take appropriate precautions.

2 Read the text again and answer the questions.

- 1 Is it obligatory for employers to insure their staff against injury?
- 2 Which regulations are concerned with computers?
- 3 Which regulations deal with the environment in the workplace?
- 4 Who is responsible for protective clothing in the workplace?
- 5 What action must employers take in case of injuries?
- 6 What did the 1999 work regulations introduce?

3 Find synonyms of these words in the text.

- | | | |
|-------------------|------------------|--------------------------|
| 1 important _____ | 4 suitable _____ | 7 free from danger _____ |
| 2 workers _____ | 5 declare _____ | 8 organise _____ |
| 3 variety _____ | 6 given _____ | 9 dangerous _____ |

4 Look at the picture. Have you ever seen these signs? Do you know their meaning? What do you have to do when they are lit during a flight? Tick the correct answers.

- 1 You mustn't use your mobile phone.
- 2 You mustn't smoke.
- 3 You can remain seated or stand up.
- 4 You must remain seated and fasten your seatbelt.



New regulations for hand luggage

There are restrictions on liquids which can be taken into the cabin on flights originating within the EU



- Volume max. 1 l
- Re-sealable
- Transparent

max.
100 ml

Please present separately at the Security Control.

5 In pairs, look at the picture and ask and answer the questions. Then read and check your knowledge about safety regulations.

- 1 What do these new restrictions concern?
- 2 Are they valid for all flights?
- 3 What is the maximum quantity of liquids you can take in your hand luggage?
- 4 Where do you have to put liquids?
- 5 Can you take a 200 ml sun cream in your hand luggage? Why? Why not?

Safety Regulations for Air Passengers

If you have travelled by airplane you will know that there are many safety procedures to follow before and during your journey. When you arrive at the airport your identity is checked several times, you have to pass through security checkpoints, and when you are on the plane and ready for take-off you have to listen to the in-flight safety procedures to understand what to do in case of an emergency. When you arrive at your destination your identity may be checked again and you may be asked to open your bags for inspection. If you are carrying liquids in your hand luggage, for example, they may be taken away from you. But why are all these safety checks so important? The main reason is to prevent acts of terrorism. Many liquids, such as perfume and aerosols, can be used to create explosives; computers can be programmed to control explosive devices; and many metal objects may be used as weapons – so controlling these items is fundamental to guarantee the safety of all passengers.

6 Read the text and decide if these statements are true (T) or false (F).

Air Safety

Many people feel very frightened when they travel by plane, but you may not know that, in fact, air travel is statistically the safest form of motorised transport known to man! Today it is estimated that there is only one fatality for every 2,000 million person-miles flown in the air. Accurate communication between the pilot and the ground is obviously fundamental for air safety, and indeed many accidents are caused when this information is inaccurate or provided too late. Four out of five accidents occur during take-off or landing procedures, that's why you must always seat with your seatbelt fastened during these procedures and you are not allowed to use electronic devices.

Another cause of accidents could be the presence of ice or snow on the wings, which increases the weight of the plane, requiring a higher speed to avoid stalling. Engine failure rarely causes accidents in large aircraft because they operate with several engines, so an emergency landing is usually possible.

When an airplane flies through volcanic ash its engines can lose power completely. Today, meteorological information is so precise that airspace is simply closed in the presence of volcanic ash, as in the case of the eruptions in Iceland in 2010.

Aircraft safety is improving all the time. However it is important to read carefully and know all the safety indications on the passenger safety card.

- 1 Only one person in 2,000 million die in an air crash. _____
- 2 80% of air accidents occur on or near the ground. _____
- 3 Many accidents are the result of poor communication. _____
- 4 Each airplane accident helps in research to improve safety. _____



Road Safety

Road safety is something that concerns everyone, because we all use roads in some way – not everyone drives their own means of transport, but most of us use public transport and everybody has to cross the road of course!

7 In pairs, complete the table, by putting the safety features from the box in the right column.

seat belts road signs cycling lanes speed bumps ABS guardrails brake lights
 pedestrian crossings cycling helmets speed cameras airbags underpasses

On vehicles	Features for users	Infrastructures
<i>seat belts</i>		

8 Here are a series of common road signs. Match them to their meanings.

- 1 parking
- 2 yield
- 3 intersection
- 4 double curve

- 5 pedestrian crossing
- 6 uneven road
- 7 school crossing
- 8 passing prohibited

- 9 no entry
- 10 no parking
- 11 no vehicle traffic
- 12 traffic lights ahead



9 Read the text about road safety and complete the sentences.

Of all the areas of human activity where safety is a concern the field of road transport is probably the most important. Road accidents are one of the most common causes of accidental death in the world, with an estimated 1 million people dying in road-related accidents every year, so it is logical that a lot of time and money are spent on constantly improving road safety across the planet. Great developments in this field have been achieved in recent times, in particular with regard to the safety of vehicles and roads themselves – just consider the airbag, ABS braking, improved road layouts, speed bumps, cat's eyes, better signposting, draining asphalt and in very recent times the introduction of sobriety devices – which drivers have to breathe into before they can start a vehicle. Today the focus is shifting to the pedestrian, after statistics have shown that the majority of victims of road accidents are people on foot or on bicycles. The use of cycling lanes, underpasses for pedestrians and reduced speed limits in urban areas are just a few examples of how greater attention is now being paid to improving the safety of people on foot or non-motorised transport.

- Road safety is one of the most important areas of _____.
- A lot of people die every year because of _____.
- Great developments have helped improving road safety, for example new cars equipped with airbag and _____.
- Today most victims of road accidents are pedestrians or _____.

10 Read the text about fleet monitoring and answer the questions.



Fleet Monitoring

One controversial scheme for improving an aspect of road safety has been the introduction of the so-called 'fleet monitoring'. You may have seen lorries, vans and other commercial vehicles driving on the streets with a sign printed on them similar to the one above. This sign is an invitation for the general public to inform transport companies of any improper behaviour by their drivers. If you see a vehicle driving too fast, overtaking dangerously or not respecting signals or limits, then you can call the number on the sign to report the incident. This invitation to make the normal citizen responsible has proven to be very useful to transport companies who have to pay large insurance premiums and feel the need

to make sure that their drivers are behaving correctly and efficiently at all times. Of course, the scheme has been criticised by many people, as they feel that it can be abused – some people have reported drivers simply because they had an argument with them, for example; and others feel that it also encourages a form of spying. Whatever you think the 'fleet monitoring' scheme is certainly popular with employers in the field, so it appears destined to grow.

- What is the 'fleet monitoring' scheme?
- Why was it introduced?
- When should the public use the telephone number?
- Why has the scheme been criticised by some people?
- Is there anything similar in your country? What is your opinion of it, and why?

11 Prepare a short oral presentation giving your opinion on the importance of road safety. Use the information from the texts above and the expressions below to help you.

I think that... / In my opinion...

I'm for/against fleet monitoring... because...

12 Here are some common railway signs. Match the signs to their meanings. Then read the text to learn more about railroad safety.

- | | |
|--|---|
| 1 railroad crossing | 3 danger: high voltage |
| 2 St Andrew Cross: stop and check for an approaching train | 4 don't cross the tracks |
| | 5 step over the gap when getting on and off a train |



A



B



C



D

NO STEPPING OVER



E

Railroad safety focuses on six main safety disciplines which include:

- | | |
|--|-------------------------------------|
| 1 hazardous materials | 4 signal and train control |
| 2 equipment | 5 tracks |
| 3 operating practices (including drug and alcohol abuse) | 6 rail and infrastructure integrity |

In Great Britain The Railway Safety Regulations were introduced in 1999. These regulations require a compulsory protection system both for the trains and railways and new safety measures for passengers and workers as well.

13 Read the text about maritime safety and answer the questions.

The European Maritime Safety Agency (EMSA), based in Lisbon, provides support to the European Commission in the development of EU legislation on maritime safety, pollution by ships and maritime security.


EMSA was set up in 2003 after two major accidents at sea: the Erika (1999) and the Prestige (2002) accidents and their resulting oil spills. These incidents resulted in huge environmental and economic damage to the coastlines of Spain and France.

EMSA's main objective is to reduce the risk of maritime accidents, marine pollution from ships and the loss of human life at sea.

- 1 Where is EMSA's headquarters?
- 2 When was it created?
- 3 Which two European countries were damaged by the Erika and Prestige accidents?
- 4 What are the main tasks EMSA has to accomplish?

14 Listen to an expert talking about IMO and decide if these statements are true (T) or false (F). Correct the false ones.

- 1 IMO means Insurance Maritime Organization. _____
- 2 IMO is a European organisation. _____
- 3 It deals with pollution issues. _____
- 4 Construction standards are not among IMO's tasks. _____

15  **13** Listen to an expert talking about safety in warehouses and complete the text with the missing words and expressions.

Most people do not know that the (1) _____ injury rate for the warehousing industry is (2) _____ than the average rate for industries in general. This may seem surprising but moving (3) _____ and materials can be a dangerous job! There are numerous potential (4) _____ in warehouses including unsafe use of forklift trucks, improper handling of materials, ergonomic hazards and slipping, tripping and (5) _____. To reduce the risk of accidents it is essential that potential hazards are communicated effectively to (6) _____ by employers. This may be done in the form of training courses, manuals and signs and (7) _____ in the workplace. Many warehouse activities also require the use of safety equipment, which must also be provided by the employer. These may include safety (8) _____, respiratory protection, (9) _____ and special overalls. Electrical systems are particularly sensitive and should always come with instructions for use, (10) _____ and emergency procedures. In case of emergency it is especially important that (11) _____ are clear and accessible and clearly marked, and that (12) _____ extinguishers are available and in good working order.

16 Complete the table referring to the text above.

Possible dangers	Safety measures
<i>unsafe use of forklift trucks</i>	<i>to communicate potential hazards</i>

17 Use the information from the text above to write a simple description explaining the meaning of the following signs used in the workplace.







18 Class discussion. Which of the above safety signs can you find in your school? Are there any other similar signs or warnings? Can you describe them and their meaning?

MY GLOSSARY

accomplish /ə'kʌmplɪʃ/ _____
 achieve /ə'tʃi:v/ _____
 ash /æʃ/ _____
 clear /klɪə(r)/ _____
 compulsory /kəm'pʌlsəri/ _____
 draining asphalt /drenɪŋ 'æsfælt/ _____
 frightened /'fraɪtnd/ _____
 injury /ɪndʒəri/ _____
 layout /leɪaʊt/ _____
 overall /əʊvə'ɔ:l/ _____

provide /prə'vaɪd/ _____
 requirement /rɪ'kwaɪəmənt/ _____
 rescue /reskjʊ:/ _____
 seafarer /si:'fɛərə(r)/ _____
 speed bump /spi:d bʌmp/ _____
 slip /slɪp/ _____
 stall /stɔ:l/ _____
 trip /trɪp/ _____
 weapon /'wepən/ _____

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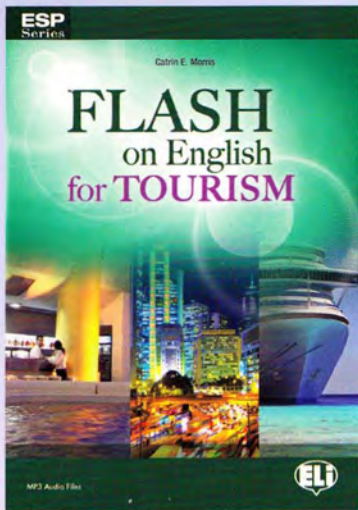
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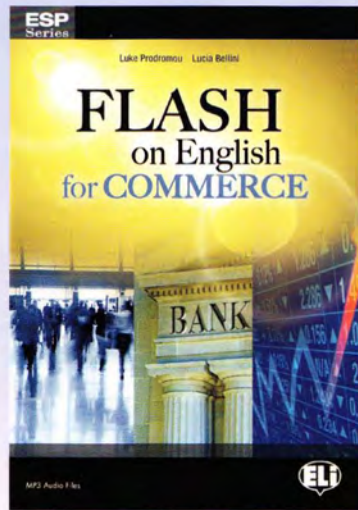
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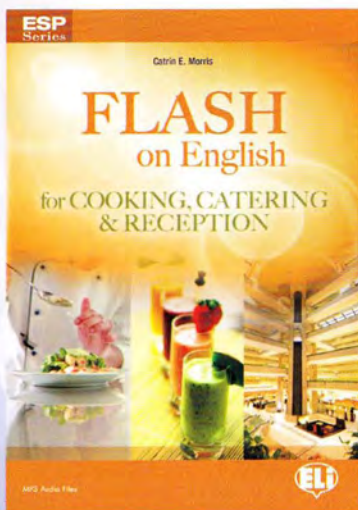
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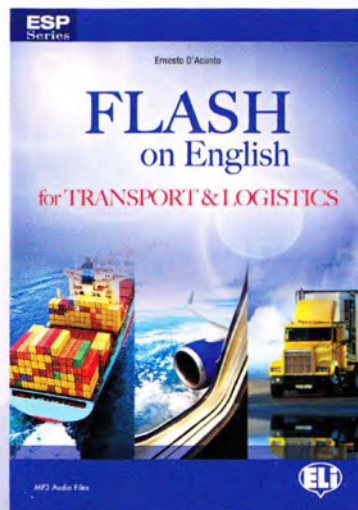
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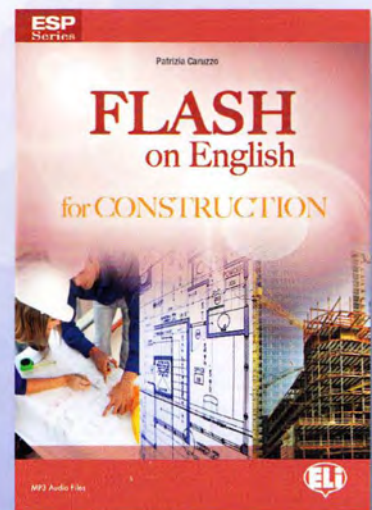
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