

ZRAKOPLOVNA TEHNIČKA ŠKOLA RUDOLFA PEREŠINA

AVIATION ENGLISH 1

ZP



INTERNA SKRIPTA IZ ENGLSKOG JEZIKA U ZRAKOPLOVSTVU

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1. History of Aviation

From Myths to the Powered Flight

Flying has been the dream of man throughout the ages. Who was the first man to fly? According to the Greek legend, it was Daedalus, the Athenian inventor, who shaped wings of wax into which he stuck bird feathers. As the story goes, Daedalus and his son Icarus had been imprisoned on the island of Crete by King Minos. They yearned to return to their native land, but their only hope of escape was to fly across the sea. When the wings were completed, they flew home and the father cautioned young Icarus to fly only the middle air. The impetuous Icarus flew too high and the sun melted the wax. He was drowned into the sea which is still called the Icarian Sea in honor of the first man to lose his life in flying.

Since that first legendary flight of Icarus, man has tried and tested thousands of ways with which to conquer gravity - and failed. Centuries ago, Leonardo da Vinci's studies of birds became the basis for a scientific investigation of flight. He reasoned that birds flew because they flapped their wings and that it was possible for man to do the same. Da Vinci designed the ornithopter, a flapping wing-flying machine.

In the 18th century, the Montgolfier brothers of France, the ornithoptists, introduced the world of flight in their hot air balloon. A step in the 'Wright' direction, yes, but What about powered flight. The answer to that question came a century later, in 1903 to be exact, when two bicycle mechanics proved to the world that powered flight was no longer a dream but reality. Thanks to Wilbur and Orville Wright's first flight, which lasted only 12 seconds, the way was clear for man to take to the air. Thanks must also go to other pioneers, such as Edward Rusjan, for the great contributions made to aviation history. If it had not been for these great men, would we be able to enjoy travelling faster than the speed of sound today or even able to walk on the moon? At last the age old dream of man has come true: no need to envy the birds their wings any longer for man can fly faster than any living bird.

1. Read the short historical survey of aviation. Arrange the following sentences in the correct sequence. The first one has been done for you.

- a. Who was the first man to fly? 1
- b. The Wright brother's first flight.
- c. He designed a flapping wing machine.
- d. The sun melted the wax.
- e. Leonardo Da Vinci studied birds.
- f. He shaped wings out of wax
- g. Flight in a hot air balloon.

2. Answer the questions.

1. Why is Daedalus called the Athenian inventor?
2. Where does the name for the Icarian Sea come from?
3. What was Leonardo Da Vinci's theory of flight based on?
4. Who introduced the first man-made object flight?
5. How long did the first powered flight last?

2. Aviation Pioneers

Edvard Rusjan was born in Trieste in 1886. He attended school in Gorica where he was apprenticed to a boilermaker and was a successful bicycle racer.

His aviation career began in 1908 when he started designing and building model aircraft. With his elder brother Josip's help, he designed a glider that later became a model for future aircraft.

A year later they began work on a powered aircraft. It was a biplane with a 3-cylinder, 25-horsepower, Anzani-model engine. In this aircraft Edvard Rusjan made the first successful powered flight in Slovene aviation history.

The flight lasted about 10 seconds and he travelled approximately 60 metres at a height of 2 metres. Four days later, he increased his distance to 500 metres at a maximum altitude of 12 metres. Observers estimated that the aircraft reached speeds of between 50 and 60 kilometres per hour.

The brothers decided to continue developing their aircraft. In one of them, Edvard made his first public flight for the citizens of Gorica. The brothers gained aeronautical knowledge rapidly and learned that the Anzani engine was not powerful enough for a biplane, so they decided that in the future, they would make only monoplanes. A new important phase of Rusjan's work began when he met Mihailo Mercep, an aviation enthusiast from Zagreb. They constructed a new aircraft and had it equipped with the best Gnome rotary engine.

In this aircraft Edvard made several successful flights that thrilled the Zagrebians. After this successful demonstration Edvard and Mercep organized a tour of European cities. The first stop was Belgrade in January 1911. Despite strong gusty winds, 24-year-old Edvard went ahead with a demonstration flight. His take-off and flight over the town were uneventful. However, while the aircraft was returning for a landing, at an approximate height of 20 metres, a strong gust ripped off a wing and the aircraft crashed against a tower wall killing the pilot outright.

However, Rusjan's death was not in vain as aviation development in Slovenia continued, spurred on by the great achievement of a true aviation hero.

1. After reading the text give short answers to the following questions.

Where was Edvard Rusjan born?

Where did he attend school?

When did his aviation career begin?

Which of his model aircraft later became a model for future aircraft?

In which aircraft did he make his first successful powered flight?

What speeds did he reach on his first flight?

Why did Edvard and his brother later decide to make only monoplanes?

When did a new important phase of Rusjan's work begin?

What engine was the newly constructed aircraft equipped with?

Where did Edvard and Mercep make the first stop on their European tour?

What was the weather like when Edvard set off on his demonstration flight?

Why did the aircraft crash against a tower wall?

2. Now write questions to which these phrases might be possible answers.

"In Trieste." - is the answer to the question "Where was Edvard Rusjan born?"

With elder brother Josip's help. _____

A glider. _____

The first powered flight. _____

About ten seconds. _____

At a height of 12 metres. _____

For the citizens of Gorica. _____

The Anzani engine. _____

Only monoplanes. _____

The Gnome rotary engine. _____

In January 1911. _____

Uneventful. _____

Because a strong gust ripped of a wing. _____

3. Match the words in the middle box with the descriptions from A to H

a. immediately	1. aeronautics	e. to tear violently or suddenly
b. a light aircraft that flies without an engine	2. gust	f. calculate roughly
c. the science and art of operating aircraft	3. glider	g. encourage to try harder
d. a sudden strong increase in speed of wind	4. rip	h. a person who competes in racing
	5. estimate	
	6. spur	
	7. racer	
	8. outright	

4. Put the following adjectives in the appropriate sentences. Use each adjective only once.

vertical, suitable, simple, successful, visual, public, aeronautical, gusty, historical, human

1. An _____ almanac which is published yearly is a book dealing with events in aviation.

2. Thundershowers often produce _____ conditions.

3. Edvard Rusjan made his first _____ flight for the citizens of Gorica.
4. Hovering is an element of _____ flight
5. George Cayley built a _____ device that somewhat resembled a helicopter.
6. The Wright brothers were in search of a _____ engine to launch their latest design on its _____ first powered flight.
7. The idea of _____ flight has engaged men from the time when they developed _____ imagination.
8. Henri Giffard, a French engineer, built the first _____ dirigible.

3. The Wright Brothers

childhood

On April 16, 1867, Milton and Susan Wright welcomed their third child into their household near Millville, Indiana. Little did Susan Wright know that she had given birth to the first half of one of the world's most famous _____ partnerships. The other half of the duo, Orville, was born four years later, on August 19, 1871, in the family's newly-built home at 7 Hawthorn Street in Dayton, Ohio.

As youngsters, Wilbur and Orville looked to their mother for _____ expertise and their father for intellectual challenge. Milton brought the boys various souvenirs and trinkets he found during his travels for the church. One such trinket, a toy helicopter-like top, sparked the boys' interest in flying. In school, Wilbur excelled, and would have graduated from high school if his family had not moved during his senior year. A skating accident and his mother's illness and subsequent death kept him from attending college. Orville was an average student, known for his mischievous behavior. He quit school before his senior year to start a printing business.

the wright cycle shop

The first time Wilbur and Orville referred to themselves as "The Wright Brothers" was when they started their own printing firm at the ages of 22 and 18. Using a damaged tombstone and buggy parts, they built a press and printed odd jobs as well as their own newspaper.

In 1892, the brothers bought bicycles. They began repairing bicycles for friends, then started their own repair business. They opened up a bicycle shop in 1893, and three years later, made their own bicycles called Van Cleves and St. Clairs. While nursing Orville, who was sick with typhoid in 1896, Wilbur read about the death of a famous German _____ pilot. The news led him to take an interest in flying. On May 30, 1899, he wrote to the Smithsonian Institution for information on _____ research.

Within a few months after writing to the Smithsonian, Wilbur had read all that was written about flying. He then defined the _____ of a flying machine: wings to provide lift, a power source for propulsion, and a system of control. Of all the early _____, Wilbur alone recognized the need to control a flying machine in its three axes of _____: pitch, roll, and yaw. His solution to the problem of control

was 'wing warping.' He came up with the revolutionary system by twisting an empty bicycle tube box with the ends removed. Twisting the surface of each 'wing' changed its position in relation to oncoming wind. Such changes in position would result in changes in the direction of flight. Wilbur tested his theory using a small _____, and it worked.

the world's first airplane

In August of 1900, Wilbur built his first glider. He then contacted the U.S. Weather Bureau for information on windy regions of the country. Reviewing the list, he chose a remote sandy area off the coast of North Carolina named Kitty Hawk, where winds averaged 13 m.p.h. He and Orville then journeyed to Kitty Hawk where they tested the 1900 glider. The following year, they tested a new and improved glider with a 22-foot _____. A disappointing performance by the 1901 glider prompted the Wright brothers to construct a wind tunnel to test the effectiveness of a variety of wing shapes. Using the results of the wind tunnel experiments, they constructed their 1902 glider. Testing it at Kitty Hawk in October, they met with success, gliding a record 620 feet. Once again they returned to Dayton and began work on developing a propeller and an engine for their next effort, a flying machine.

Having designed a propeller with the same principles they used to design their wings, Wilbur and Orville then built their own 4-cylinder, 12-horsepower engine. They built the 1903 Flyer in sections in the back room of their cycle shop in Dayton. When completed, it was shipped down to Kitty Hawk and assembled. On December 14, 1903, Wilbur won a coin toss and made the first attempt to fly the machine. He stalled it on _____, causing some minor damage. The plane was repaired, and Orville made the next attempt on December 17. At 10:35 a.m., he made the first heavier-than-air, machine powered flight in the world. In a flight lasting only 12 seconds and covering just 120 feet, Orville did what men and women had only dreamed of doing for centuries – he flew.

TASKS:

- 1) *While reading the text, put in the missing words:*

aeronautical , aviators, elements, glider , inventive, kite, mechanical, motion, take-off, wingspan

- 2) Homework

Choose ten unknown words from the text, write them down and find explanation and translation.

4. Amelia Earhart's last flight



Amelia Earhart is one of the best-known female pilots in the world. She died in an airplane crash in the Pacific Ocean during her flight around the world in 1937. The plane's wreckage and remains of the crew members have never been found. The mystery around the crash has created many conspiracy theories.

In March 1937, Amelia Earhart started her first attempt to fly around the world. Her goal was to circumnavigate the globe along the Equator. Six other aviators had already flown around the world along shorter routes. She successfully completed the first leg of the flight from Oakland to Honolulu, but due to problems with the propeller, the aircraft needed maintenance in Hawaii. Three days later Earhart and her crew resumed the flight. During the takeoff roll she lost control of the aircraft. The forward landing gear collapsed and both propellers hit the ground. The damaged aircraft was sent to the factory for repairs and the flight was called off.

In June 1937, Amelia Earhart and her navigator, Fred Noonan, began a second attempt of circumnavigating the globe. This time they decided to fly in the opposite, eastbound direction to accommodate the seasonal changes in global wind and weather patterns. They flew a twin-engine Lockheed 10E Electra from Oakland, California to Miami and then down to South America. They crossed the Atlantic Ocean to Africa and headed further east towards India and Southern Asia. After 40 days of travel, they reached Lae in New Guinea on June 29th. At that point they had already 22,000 miles behind them and only 7,000 miles to go to complete their expedition.

The leg from New Guinea to Howland Island was the longest and most dangerous part of their journey. They departed New Guinea on July 4th. The next morning, they approached Howland Island. Earhart radioed Coast Guard ship anchored close to the island. The Coast Guard received her radio transmissions saying that she could not find the island, but communications that the ship sent never reached the aircraft. In her last message Earhart said that they were running out fuel. Eventually, radio contact was lost. It is believed that the aircraft ran out of fuel and crashed to the Pacific Ocean. Both Earhart and Noonan were officially declared lost at sea and the wreckage of their plane was never found.

VOCABULARY

airplane crash – an accident in which an aircraft hits land or water and is damaged

wreckage – something badly damaged, specifically a vehicle after an accident

remains – a person's body after death

tragic event – a standard explanation for a tragic event

attempt – an act of trying to achieve something

route – a way taken to get from a starting point to a destination

leg of a flight – one of multiple flight segments of a planned trip usually done to refuel the plane and/or load passengers and cargo

due to – caused by

resume – to pursue something again after a pause or interruption

takeoff roll – the portion of the takeoff when the airplane is accelerating down the runway from a standstill to an airspeed that provides sufficient lift for it to become airborne

landing gear – the undercarriage, including wheels of an aircraft that are used for takeoff and landing

to call off – to cancel an event or agreement

twin-engine aircraft – an aircraft with two engines

expedition – a journey undertaken by a group of people with a particular goal

to approach – to come close to something

to receive – to convert incoming radio waves into understandable communications

to run out of something – to use something (fuel) until there is none left

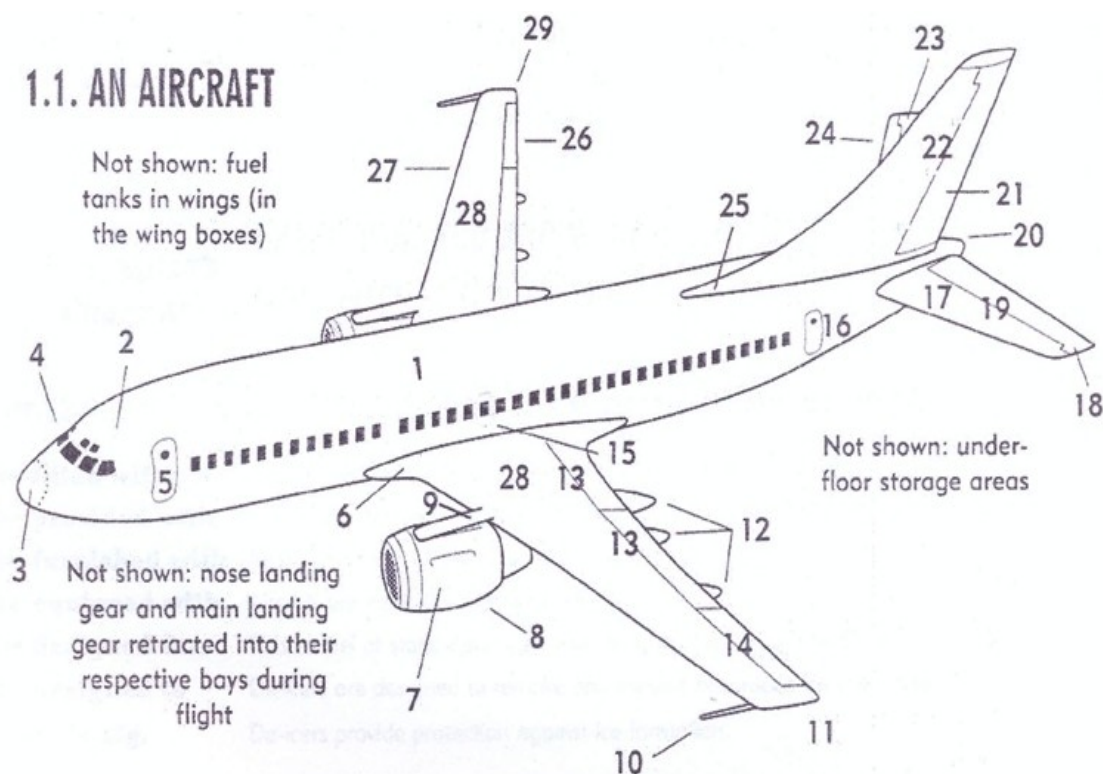
UNDERSTANDING

Check your understanding of the text by answering if the following sentences are TRUE (T) or FALSE (F).

- a) Amelia Earhart was the first person to circumnavigate the Earth.
- b) Her first attempt to fly around the world was called off due to bad weather conditions.
- c) Earhart flew in the eastbound direction to accommodate for the seasonal global wind and weather patterns.
- d) She flew more than 22,000 miles during her last flight.
- e) Earhart was not able to hear the radio transmission sent by the Coast Guard.

5. Basic Aircraft Structure

1.1. AN AIRCRAFT



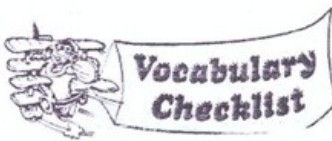
1.1.1. IDENTIFY THE FOLLOWING PARTS. WRITE IN THE CORRESPONDING NUMBERS.

- | | | | |
|---|-------|---------------------------------|-------|
| a. fuselage | ..... | o. port navigation light (red) | ..... |
| b. cockpit | ..... | p. flaps | ..... |
| c. radome | ..... | q. aileron | ..... |
| d. wing | ..... | r. flap track fairings | ..... |
| e. leading edge (wing) | ..... | s. rear evacuation exit | ..... |
| f. trailing edge (wing) | ..... | t. vertical stabilizer | ..... |
| g. wing root fairing | ..... | u. horizontal stabilizer | ..... |
| h. engine | ..... | v. port trimming tailplane | ..... |
| i. engine pod/nacelle | ..... | w. starboard trimming tailplane | ..... |
| j. pylon | ..... | x. fin root fairing (fillet) | ..... |
| k. passenger door | ..... | y. rudder | ..... |
| l. emergency evacuation exit | ..... | z. tailcone | ..... |
| m. windscreen ¹ (windshield) | ..... | aa. port elevator | ..... |
| and wipers | ..... | bb. starboard navigation light | ..... |
| n. static dischargers | ..... | cc. starboard elevator | ..... |

¹windscreen is the British word for *windshield* used in the US.

1.1.2. MATCH EACH PART BELOW WITH WHAT IT DOES OR PROVIDES

- | | |
|--------------------------------|---|
| 1. RADOME | a. provides protection to tracks |
| 2. ENGINE | b. houses instruments |
| 3. ENGINE POD/NACELLE | c. provides thrust |
| 4. PYLON | d. fastens the engine to the wing |
| 5. WING | e. fastens stabilizer to fuselage |
| 6. NAVIGATION LIGHTS | f. houses the passenger cabins, cockpit and underfloor areas |
| 7. FLAP TRACK FAIRINGS | g. provides lift |
| 8. VERTICAL STABILIZER | h. identify the aircraft, make aircraft visible at night |
| 9. HORIZONTAL STABILIZER | i. with elevators, provides stability and balance in flight |
| 10. FUSELAGE | j. with fin and rudder, also contributes to stability and balance |
| 11. FIN ROOT FAIRING | k. provides directional guidance in flight |
| 12. RUDDER | l. surrounds and protects the engine |



CHECK THAT YOU KNOW THESE WORDS Configuration and design

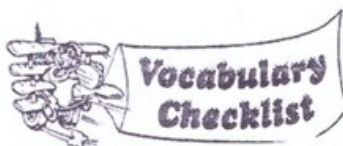
THESE EXPRESSIONS WILL BE USED THROUGHOUT THIS BOOK. BE SURE THAT YOU ARE FAMILIAR WITH THEM.

- | | |
|---|--|
| ☐ to be fitted with/on | Aircraft are fitted with equipment. Wings are fitted with static dischargers. |
| ☐ to be provided with | Wings are provided with static dischargers. |
| ☐ to be furnished with | All equipment is furnished with specifications. |
| ☐ to be equipped with | Aircraft are equipped with de-icers. |
| ☐ to be designed for | This model of static discharger was designed for use on the B777. |
| ☐ to be designed to | De-icers are designed to remove and prevent hazardous ice formation. |
| ☐ to provide stg. | De-icers provide protection against ice formation. |
| ☐ to be provided | Specifications are provided upon request. |
| ☐ to furnish stg. | De-icers furnish protection against ice formation.
Details will be furnished upon request. |
| ☐ to supply stg. | The APU (auxiliary power unit) supplies power while the aircraft is grounded.
The airline agreed to supply all airlines with updated service bulletins. |



1.1.3. GET INTO TRAINING. PRACTICE USING THE WORDS ABOVE.

- Wings flaps. Each wing is also navigation lights.
- Very sophisticated computer systems the pilot information during the entire flight.
- The horizontal and vertical stabilizers are stability in flight.
- Each windshield (UK: windscreen) to remove rain.
- The engines thrust for horizontal displacement of the aircraft.
- Fuel tanks
- All aircraft nose and main landing gear.



FOCUS ON ENABLING AND ALLOWING Vocabulary and Grammatical Patterns

☐ **to allow somebody to do something**

The computer systems allow the pilot to monitor all flight parameters.

☐ **to enable somebody to do something**

The newly designed display screens allow the pilot to see at a glance the engine pressure ratio.

☐ **to make it possible for somebody to do something**

Today's widebodies make it possible for passengers to travel in maximum comfort.

☐ **to allow something (to be done)**

Computer systems allow constant temperature control, allows the temperature to be controlled.

☐ **to enable something (to be done)**

The computer systems enable pressurization and other parameters to be monitored at all times.

☐ **to make it possible for something to be done**

Sophisticated warning systems make it possible for passengers to be transported in maximum safety conditions.

Notice these models

1. Modern aircraft are equipped with sophisticated computer systems.
2. These systems are designed to allow the pilot to monitor all flight aspects.

And combined into one sentence:

3. Modern aircraft are equipped with sophisticated computer systems designed to allow the pilot to monitor all flight aspects.

Training Exercises!



1.1.4. GET INTO TRAINING.

MAKE COMPLETE STATEMENTS USING THE PROMPTS.

EXAMPLE:

Radar system/design/pilot/identification of obstacles or weather fronts

Aircraft are equipped with radar systems designed to allow pilots to identify obstacles and weather fronts.

1. Wings/design/thrust
2. Navigation lights/aircraft/identified from a distance
3. Tailplane/flight stability
4. Cockpit windows/pilots/adequate angles of visibility
5. landing gear/taxi on the ground/ land
6. underfloor storage areas/passenger baggage/cargo/transport
7. fuel tanks in wings/engines/fuel
8. The APU (auxiliary power unit)/aircraft/electricity during on-ground operations.

1.2. SIMPLE DESCRIPTIONS

THE VERTICAL STABILIZER

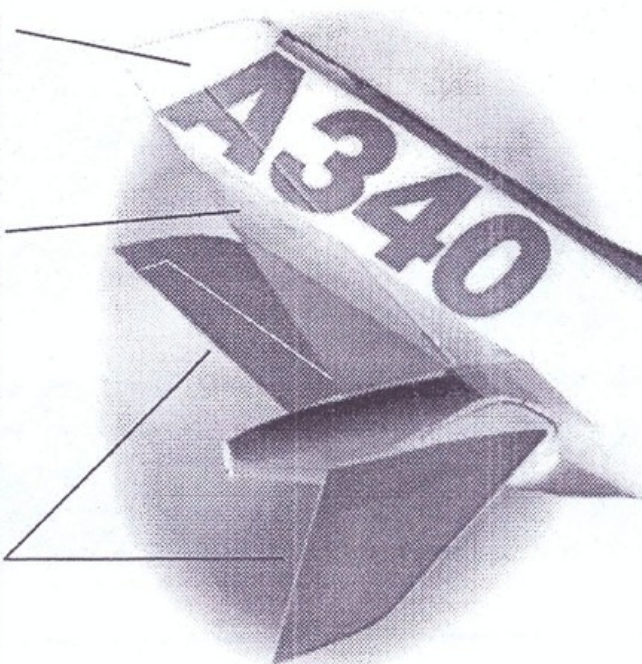
The vertical stabilizer or tailplane is designed to provide stability when the aircraft pitches.

THE RUDDER

The rudder is the rearmost (or aftmost) part of the vertical stabilizer and provides directional guidance while the aircraft is on the runway, or corrects imbalance during flight (controlling the aircraft in the yaw axis).

THE HORIZONTAL STABILIZER

The purpose of the horizontal stabilizer is to provide the movement required for trimming to ensure balanced flight.



from an original photograph ©Airbus Industrie. Reproduced by permission.

Going further



More detailed descriptions. Note the following description of the horizontal stabilizer.

The horizontal stabilizer is one of the flight controls and is used to trim the aircraft in the pitch axis. It is actuated by two motors which are coupled differentially and which are driven by two different hydraulic systems. An elevator is located on each side of the horizontal stabilizer also driven by hydraulic actuators.

For more information on pitch (and yaw) see the following pages.

1.2.1. PRACTICE

CAN YOU PROVIDE APPROPRIATE DESCRIPTIONS FOR THE OTHER AIRCRAFT STRUCTURES SHOWN IN THE DRAWING ON PAGE 2? FOR INSTANCE:

- Emergency evacuation exits
- Starboard and port navigation lights:
- Cabin door:
- Flaps:
- Flap tracks:
- Windshield (UK: windcreens) :
- Windshield wipers:
- Wings:

Structures such as wings, flaps, and slaps are treated in later sections.

6. Parts of an airplane



Get ready!

- 1 Before you read the passage, talk about these questions.

- 1 What are some of the parts of a fixed wing aircraft?
- 2 What part of an airplane is involved in landing?

Reading

- 2 Read the textbook chapter on parts of an aircraft. Then, mark the following statements as true (T) or false (F).

- 1 ___ A plane's wings attach to the fuselage.
- 2 ___ The nose has stabilizers to keep an aircraft steady.
- 3 ___ Turboprops are less appropriate for large, fast jets.

Vocabulary

- 3 Match the words or phrases (1-7) with the definitions (A-G).

- | | |
|----------------------|--------------------|
| 1 ___ tail | 5 ___ fuselage |
| 2 ___ tire | 6 ___ turboprop |
| 3 ___ nose | 7 ___ landing gear |
| 4 ___ turbine engine | |

- A the central part of an aircraft's body
 B an engine that uses a propeller for thrust
 C the front part of an aircraft
 D the rear part of an aircraft
 E a rubber part around a wheel
 F an engine that uses exhaust for propulsion
 G a structure supporting aircraft while not in flight

4 Choose the sentence that uses the underlined part correctly.

- 1 A The plane needs wheels to land safely.
B The damaged tire caused the pilot to lose control during flight.
- 2 A Airplanes and jets are examples of fixed wing aircraft.
B A jet gets its propulsion from the fuselage.
- 3 A The cockpit is usually located at the tail of an aircraft.
B Wings provide the lift needed for a plane to fly.

5 Listen and read the textbook chapter on parts of an aircraft again. Why does an aircraft need strong tires?

Listening

6 Listen to a conversation between a pilot and a copilot. Choose the correct answers.

- 1 What is the purpose of the conversation?
A to explain an accident on the runway
B to discuss damage to an aircraft
C to give instructions for repairing a wheel
D to reprimand the crew for a poor landing
- 2 What will the pilot likely do next?
A get ready for takeoff C practice landing
B examine the wheels D order new tires

7 Listen again and complete the conversation.

Pilot: Jamie, are we ready for 1 _____?
Copilot: Almost, Glen. But I'm concerned about 2 _____.
Pilot: Really? What's 3 _____?
Copilot: It looks a little crooked. I think we damaged it 4 _____ yesterday.
Pilot: Oh, I remember. That was 5 _____.
Copilot: Yeah. Do you think the tires were 6 _____?
Pilot: I'm not sure. But we certainly can't get started until we look into it.



Speaking

8 With a partner, act out the roles below based on Task 7. Then, switch roles.

USE LANGUAGE SUCH AS:

*I'm concerned about ...
 I think we damaged it when ...
 Do you think ...?*

Student A: You are a pilot. Talk to Student B about:

- damage to an aircraft part
- the cause of the damage
- action required

Student B: You are a copilot. Talk to Student A about damage to an aircraft part.

Writing

9 Use the conversation from Task 8 to complete the pilot's damage report.

Pilot's Damage Report

Aircraft: **JetWing 579**

Part damaged: _____

Cause of damage: _____

Replace damaged part? Y / N



Get ready!

- 1 Before you read the passage, talk about these questions.

- 1 What are some parts of an aircraft's wing?
- 2 Which parts guide an aircraft during takeoff and landing?

Reading

- 2 Read the training guide. Then, mark the following statements as true (T) or false (F).

- 1 ☐ Ailerons guide an aircraft during takeoff.
- 2 ☐ A spoiler helps a pilot fly faster.
- 3 ☐ Pilots need stabilizers to prevent unwanted movement.

Vocabulary

- 3 Read the sentences and choose the correct words.

- 1 The **spoiler** / **horizontal stabilizer** prevents unwanted up-and-down movement.
- 2 The pilot used the **rudder** / **elevator** to bring the plane down to the runway.
- 3 **Flaps** / **Winglets** allow the pilot to increase the amount of force produced.
- 4 A pilot slows down during landing by adjusting the **vertical stabilizers** / **slats**.

- 4 Place the correct words and phrases from the word bank under the correct headings.

Word BANK

winglet vertical stabilizer spoiler
rudder outboard slat aileron

Steering	Speed	Steadiness

- 5 Listen and read the training guide again. What do an aileron and a rudder do?

Listening

- 6 Listen to a conversation between a flight instructor and a student. Check (✓) the aircraft parts that are defined in the lesson.

- 1 ☐ aileron 4 ☐ rudder
2 ☐ spoiler 5 ☐ elevator
3 ☐ winglet

- 7 Listen again and complete the conversation.

Instructor: Okay, Henry. Tell me what parts are important for 1 _____.

Student: Well, you 2 _____ to move up and down.

Instructor: Good. What else?

Student: Um, let's see. The 3 _____ allows the aircraft to roll from side to side.

Instructor: You're close, but that's 4 _____ . Try again.

Student: Oh, of course. It's the 5 _____ that controls rolling movements.

Instructor: 6 _____. And what does the rudder do?

Student: The rudder counters the movement of the aileron.

Speaking

- 8 With a partner, act out the roles below based on Task 7. Then, switch roles.

USE LANGUAGE SUCH AS:

You use the ... to move ...

You're close, but ...

What does the ... do?

Student A: You are a flight instructor. Talk to Student B about:

- parts for steering an aircraft
- types of aircraft movement
- an error he or she makes

Student B: You are a student. Talk to Student A about parts for steering an aircraft.

Writing

- 9 Use the conversation from Task 8 to complete the student's lesson notes.



Student's

Lesson notes

Name: _____

Aircraft part: _____ Movement controlled: _____

1 _____

2 _____

3 _____

7. Parts of the cabin

Get ready!

1 Before you read the passage, talk about these questions.

- 1 What are some different parts of the cabin?
- 2 What are the differences between the travel classes?

The image shows a screenshot of the Chambliss Airways website. At the top, there are navigation tabs: HOME, ABOUT, and SERVICES. Below the tabs is a banner for Chambliss Airways with a red arrow pointing to the 'ABOUT' tab. The banner also features a 'center seat' label. Below the banner, there is a section titled 'Travel Classes' with three columns: First class, Business class, and Coach. Each column has a corresponding image: First class shows a table with a bottle and glasses; Business class shows a window seat; Coach shows an aisle seat. Below these images, there is a text box that says: 'We offer spacious cabins on all of our aircrafts. Our rows of seats offer plenty of leg room. Even the tallest passenger will be comfortable. When you book your flight, choose your seat position.' Below this text, there are three buttons: WINDOW, AISLE, and CENTER. Below the buttons, there is a text box that says: 'Passengers may also request seats in the aircraft's front, middle, or rear. Seat preferences are given on a first-come, first-served basis. Book your flight early. It ensures you get the seat you want.' At the bottom, there is a seat selection interface showing 'SEAT 12C', 'GROUP 3', and a barcode.

Reading

2 Read the webpage. Then, choose the correct answers.

- 1 What is the purpose of the website?
 - A to describe the type of seats available to passengers
 - B to explain how to make a reservation with the airline
 - C to list the different airplanes used by the company
 - D to give safety instructions on how to exit the cabin
- 2 Which of the following is NOT a seat location?
 - A window
 - B aisle
 - C row
 - D center
- 3 How do passengers make sure they get the seat that they want?
 - A by using the same airline regularly
 - B by requesting seats on the day they fly
 - C by arriving at the airport several hours early
 - D by buying their tickets in advance

Vocabulary

3 Write a word that is similar in meaning to the underlined part.

- 1 After the passengers left, the workers cleaned the part of the plane where passengers sit.
_ a _ i _
- 2 The man wanted to sit in the expensive seats that have the most room.
_ _ r _ t c _ a _ s
- 3 The flight attendant pushed the drinks cart down the passage running down the center of the plane.
_ i _ l e
- 4 The airplane was small so there were not many lines of seats.
_ o _ s
- 5 The woman preferred to sit next to the space in the wall filled with clear glass or plastic.
_ _ n d _ w

Chambliss Airways

- 4 Fill in the blanks with the correct words or phrases from the word bank.

Word BANK

travel classes business class
center seat coach

- _____ class tickets are the least expensive to purchase.
- The man flew in _____ when he went on trips for his company.
- The _____ was uncomfortable and the woman did not like sitting in it.
- Of the three types of _____, coach offers the least leg room.
- The seats in the _____ are less popular than window or aisle seats.

- 5 Listen and read the webpage again. How much legroom is there on the company's planes?

Listening

- 6 Listen to a conversation between a flight attendant and a passenger. Mark the following statements as true (T) or false (F).

- ___ The woman needs reading glasses.
- ___ A boarding pass contains seat information.
- ___ The man is sitting next to the window.

- 7 Listen again and complete the conversation.

Flight Attendant: Good morning, sir. Can I help you 1 _____?

Passenger: Yes, please. I 2 _____ my reading glasses at home ...

Flight Attendant: And the 3 _____ on the boarding passes is quite small.

Passenger: Exactly. 4 _____ I can't read it without my glasses.

Flight Attendant: May I see your 5 _____?

Passenger: Here you go.

Flight Attendant: It looks like you are in 6 _____, Seat A. That's going to be the window seat.

Passenger: Great, thank you for your help.

Speaking

- 8 With a partner, act out the roles below based on Task 7. Then, switch roles.

USE LANGUAGE SUCH AS:

Can I help you ...?

I'm afraid ...

You are in ...

Student A: You are a flight attendant. Talk to Student B about:

- whether he or she needs assistance
- looking at his or her boarding pass
- his or her seat assignment

Student B: You are a passenger. Talk to Student A about finding your seat on the plane.

Writing

- 9 Use the conversation from Task 8 to fill out the airline's questionnaire.

Chambliss Airways

Thank you for taking the time to give us feedback.

- 1 What travel class did you sit in?

- 2 What was your seat assignment?

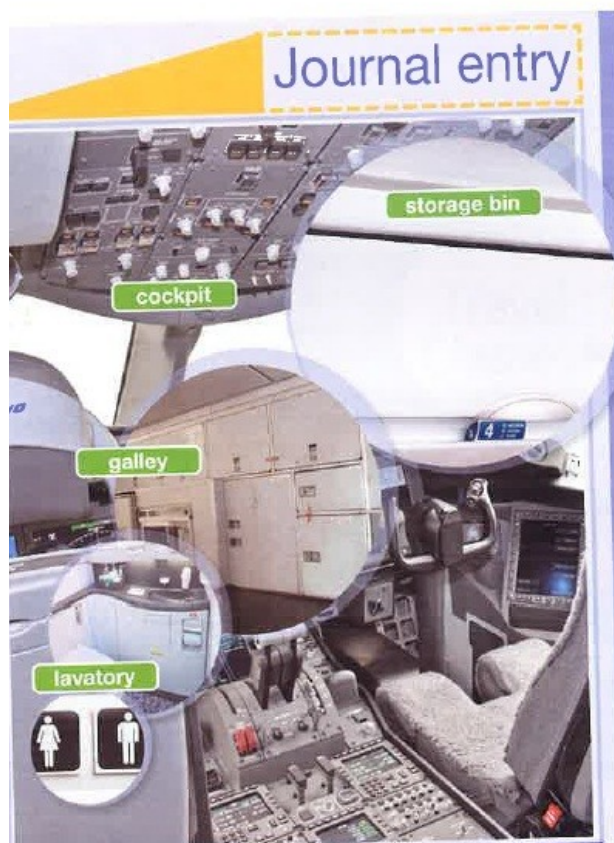
- 3 Did you sit in an aisle, center, or window seat?

- 4 Were you comfortable while traveling?

Get ready!

1 Before you read the passage, talk about these questions.

- 1 What parts of the cabin do passengers use?
- 2 What parts of the cabin does the flight crew use?



August 23

This morning I had a flight from Dallas to Chicago. Before the passengers boarded, I loaded the cart in the **galley**. Then I checked the **lavatories**. I refilled the soap and toilet paper before takeoff.

I helped passengers with carry-on bags. I put them in the **overhead storage bins**. I closed the doors on the full **compartments**. Then, I spoke to the passengers in the **exit row**. They were capable of operating the **emergency exits**.

Then, an announcement came from the **cockpit**. It was time to take off. I sat in a **jumpseat**. It was in the galley by the **flight deck**. Soon, we were on our way to Chicago.

Reading

2 Read the journal entry. Then, mark the following statements as true (T) or false (F).

- 1 ☐ One of the flight attendant's duties is to check the lavatories.
- 2 ☐ Carry-on bags are placed in compartments in the galley.
- 3 ☐ The flight attendant sat in a jumpseat near the rear of the plane.

Vocabulary

3 Match the words or phrases (1-5) with the definitions (A-E).

- | | |
|---|-------------------------------------|
| 1 ☐ emergency exit | 4 ☐ lavatory |
| 2 ☐ galley | 5 ☐ overhead |
| 3 ☐ jumpseat | |

- A a room that has a toilet and a sink
 B being directly over or above someone or something
 C a door that lets people leave in the event of a dangerous situation
 D an area of a plane where food, beverages, and emergency equipment are stored
 E a folding seat on a plane that is used by crew members

4 Place the words or phrases from the word bank in the correct box.

Word BANK

cockpit exit row compartment
 storage bin flight deck

Pilot's location	
Luggage location	
Passenger location	

- 5 Listen and read the journal entry again. What are the tasks that are performed by the flight attendant before the passengers board the airplane?

Listening

- 6 Listen to a conversation between a flight attendant and a passenger. Choose the correct answers.
- Why does the flight attendant talk to the passenger?
 - A to check that she no longer feels sick
 - B to show the passenger to her seat in the exit row
 - C to tell her that she is not old enough to sit in the exit row
 - D to make sure that she can operate the emergency door
 - What will the passenger most likely do next?
 - A fasten her seat belt
 - B read the instruction card
 - C change seats with someone
 - D open the emergency door

- 7 Listen again and complete the conversation.

Flight Attendant: Hello, ma'am. How are you today?

Passenger: I'm fine. 1 _____?

Flight Attendant: I'm good. Did you 2 _____ that you're sitting in an exit row?

Passenger: Yes, I 3 _____ when I found my seat.

Flight Attendant: Can you operate the emergency door 4 _____?

Passenger: Yes. I'm in 5 _____, and I'm certainly over fifteen years old!

Flight Attendant: Great. I have an 6 _____ just for you. It explains how to open the door.

Passenger: Thank you. I'll be sure to read it.

Speaking

- 8 With a partner, act out the roles below based on Task 7. Then, switch roles.

USE LANGUAGE SUCH AS:

Can you operate ...?
I'm certainly over ...
It explains how ...

Student A: You are a flight attendant. Talk to Student B about:

- the seat location
- his or her physical condition
- the instruction card

Student B: You are a passenger. Talk to Student A about sitting in the exit row.

Writing

- 9 Use the conversation from Task 8 to fill out the notice for those sitting in an exit row.

Exit Row Guidelines

Passengers in exit rows must be:

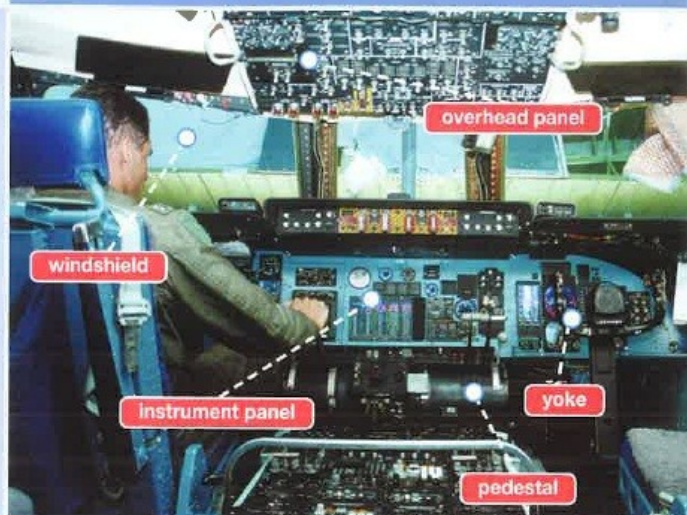
8. The cockpit

Cockpit Basics

A cockpit contains the controls needed for flying the aircraft. Here, you will find **rudder pedals** for steering. Always check whether to control movement with a **side stick**, **center stick**, or traditional **yoke**. Power controls like the **throttle** are typically between the pilot and copilot on the **pedestal**.

Learn about your **instrument panel**. This will let you easily check your flight status. Most aircraft have an **overhead panel** above the **windshield**. This area often includes the cabin's climate controls.

As a pilot, you must be comfortable in your aircraft's **cockpit**, or **flight deck**. This guide will help you identify the standard features of a cockpit.



Get ready!

- 1 Before you read the passage, talk about these questions.

- 1 What are the two main panels in a cockpit?
- 2 What is the yoke used for?

Reading

- 2 Read the training guide. Then, choose the correct answers.

- 1 What is the purpose of the passage?
 - A to outline a checklist for cockpit inspections
 - B to compare types of cockpit controls
 - C to give instructions for flying an aircraft
 - D to introduce features of a cockpit
- 2 Which feature does NOT control flight movement?
 - A center stick C overhead panel
 - B rudder pedals D throttle
- 3 What can you infer about a yoke?
 - A It is a feature of some aircraft, but not all.
 - B It is superior to a center stick.
 - C It is typically located to the side of the pilot.
 - D It is an alternative to a throttle.

Vocabulary

- 3 Write a word or phrase that is similar in meaning to the underlined part.

- 1 Large, commercial jets often have a(n) W-shaped control for adjusting pitch.
_ _ k e
- 2 To turn the nose to the right, press the right control for turning the aircraft.
_ u d _ _ p _ _ a l
- 3 We inspected all the controls in the section of an aircraft where the pilot sits.
_ o _ k _ i t
- 4 Speed up by adjusting the part that controls fuel to the engine.
t _ _ o t _ _ e
- 5 Pilots of smaller aircraft often prefer a pitch control located to the side of the pilot.
s _ _ e _ t _ c k

4 Read the sentence pairs. Choose which word or phrase best fits each blank.

1 flight deck / instrument panel

- A Check the _____ to verify our heading.
 B The copilot left the _____ to inform the crew of the route change.

2 pedestal / center stick

- A Both the pilot and copilot can reach controls on the _____.
 B This aircraft has a _____ to control its movement.

3 overhead panel / windshield

- A The de-icing control is located on the _____.
 B We couldn't see anything through the _____ because of the heavy clouds.

5 Listen and read the training guide again. What is another name for the cockpit?

Listening

6 Listen to a conversation between a flight instructor and a student. Mark the following statements as true (T) or false (F).

- 1 ___ The woman defines the purpose of a yoke incorrectly.
 2 ___ The yoke is directly in front of the pilot.
 3 ___ A side stick is designed for two-handed operation.

7 Listen again and complete the conversation.

Instructor: Does anyone have questions about 1 _____ ?

Student: Yes, Sir. You said the 2 _____ controls pitch. Doesn't the yoke do that?

Instructor: Yes, but some aircraft models use a side stick instead of a 3 _____.

Student: What's 4 _____ ?

Instructor: It just depends on the design of the cockpit. A side stick sits to 5 _____ for one-handed operation.

Student: Oh, I see. And a yoke is designed for 6 _____ - _____ operation.

Instructor: Right. It is positioned directly in front of the pilot.

Speaking

8 With a partner, act out the roles below based on Task 7. Then switch roles.

USE LANGUAGE SUCH AS:

Doesn't the ... control ...?

Some models use ...

A ... is designed for ...

Student A: You are a flight instructor. Talk to Student B about:

- cockpit controls
- differences between parts
- the locations of different parts

Student B: You are a student. Talk to Student A about cockpit controls.

Writing

9 Use the conversation from Task 8 to complete the student's lesson notes.

Student's Lesson notes

Topic:

Controlling pitch

Part: _____

Cockpit location: _____

Part: _____

Cockpit location: _____

9. Flight instruments

1.5 FLIGHT INSTRUMENTS

The layout of the **Basic Six** follows the **T Arrangement**.

ATTITUDE INDICATOR – This unit is reliable through 60 degrees of climb and dive.

HEADING INDICATOR – This unit is reliable through 55 degrees of climb and dive.

AIRSPEED INDICATOR – Speeds appear in knots per hour.

ALTIMETER – The short needle indicates thousands of feet. The long needle indicates hundreds of feet.

VERTICAL SPEED INDICATOR – This unit indicates rate of climb or descent up to 2,000 feet per minute.

COURSE DEVIATION INDICATOR – The programmed sensitivity is 5 nautical miles.

TURN COORDINATOR – Model V-56C uses a 2-minute turn rate instrument.

SINGLE-NEEDLE RADIO MAGNETIC INDICATOR – Model V-56C uses a single-needle instrument to indicate direction.

MAGNETIC COMPASS

AIRCRAFT
MANUAL
MODEL
V-56C



1.5.1 Illustration "Cockpit Front View: Location of Flight Instruments"

Get ready!

1 Before you read the passage, talk about these questions.

- 1 What is the name for the primary flight instruments?
- 2 What are some important primary flight instruments?

Reading

2 Read the aircraft manual. Then, choose the correct answers.

- 1 What is the purpose of the manual?
 - A to specify when to replace flight instruments
 - B to describe common flight instrument errors
 - C to list technical details of flight instruments
 - D to show where flight instruments are located
- 2 Which of the following statements is NOT true?
 - A The aircraft has a single-needle radio magnetic indicator.
 - B The heading indicator is reliable through a set degree of climb.
 - C The course deviation indicator has a programmed sensitivity.
 - D The plane does not have a magnetic compass.
- 3 Which instrument indicates a plane's direction?
 - A airspeed indicator
 - B radio magnetic indicator
 - C course deviation indicator
 - D attitude indicator

Vocabulary

3 Match the words or phrases (1-8) with the definitions (A-H).

- 1 ___ altimeter
- 2 ___ Basic Six
- 3 ___ turn coordinator
- 4 ___ airspeed indicator
- 5 ___ heading indicator
- 6 ___ magnetic compass
- 7 ___ radio magnetic indicator
- 8 ___ course deviation indicator

- A a flight instrument that shows a plane's speed
- B a flight instrument that shows a plane's position relative to its course
- C a flight instrument that shows a plane's direction relative to magnetic north
- D a flight instrument that shows a plane's altitude
- E a flight instrument that uses radio and magnetic information to show a plane's direction
- F flight instruments that make up the standard flight panel
- G a flight instrument that shows how fast and in what direction a plane is turning
- H a flight instrument that shows a plane's direction relative to magnetic north during level flight

- 4 Read the sentence pairs. Choose which word or phrase best fits each blank.

1 vertical speed indicator / T arrangement

A In the _____, the altimeter is below the airspeed indicator.

B According to the _____, the plane was climbing very fast.

2 flight instruments / attitude indicator

A During bad weather, pilots navigate using _____.

B The pilot kept the aircraft level with the horizon by keeping his eye on the _____.

- 5 Listen and read the aircraft manual again. How does the altimeter display altitude?

Listening

- 6 Listen to a conversation between a flight instructor and a student. Mark the following statements as true (T) or false (F).

- 1 ___ The attitude indicator is next to the airspeed indicator.
- 2 ___ The man cannot identify the airspeed indicator.
- 3 ___ The altimeter shows how fast the plane is moving.

- 7 Listen again and complete the conversation.

Instructor: Let's start the exam. Where is the 1 _____ on this plane?

Student: It's in the center of the 2 _____ on the instrument panel.

Instructor: Well done. Now, can you identify the instruments 3 _____ it?

Student: 4 _____ is the airspeed indicator, I believe.

Instructor: Excellent. And what does it do?

Student: It tells the pilot 5 _____ the plane is moving.

Instructor: Correct. And what's below that?

Student: Below that is the altimeter. It shows the 6 _____.

Speaking

- 8 With a partner, act out the roles below based on Task 7. Then, switch roles.

USE LANGUAGE SUCH AS:

Where is the ... on this plane?

Can you identify the ...?

It tells the pilot how ...

Student A: You are a flight instructor. Ask Student B about:

- the location of flight instruments on a plane
- the purpose of those flight instruments

Student B: You are a student pilot. Talk to Student A about flight instruments.

Writing

- 9 Use the conversation from Task 8 and the manual to complete the flying exam checklist.



Flying Exam I

Checklist

Aircraft: _____

Please identify flight instruments on this aircraft:

Please describe the layout of the instrument panel:

Are all instruments in good condition?

10. Types of Aircraft

aerodyne	hang glider	rocket
aerostat	spacecraft	parachute
missile	glider	balloon
aeroplane	airship	Rules of the Air
aircraft	rotorcraft	air traffic participant

2. Read the text, then answer the following questions:

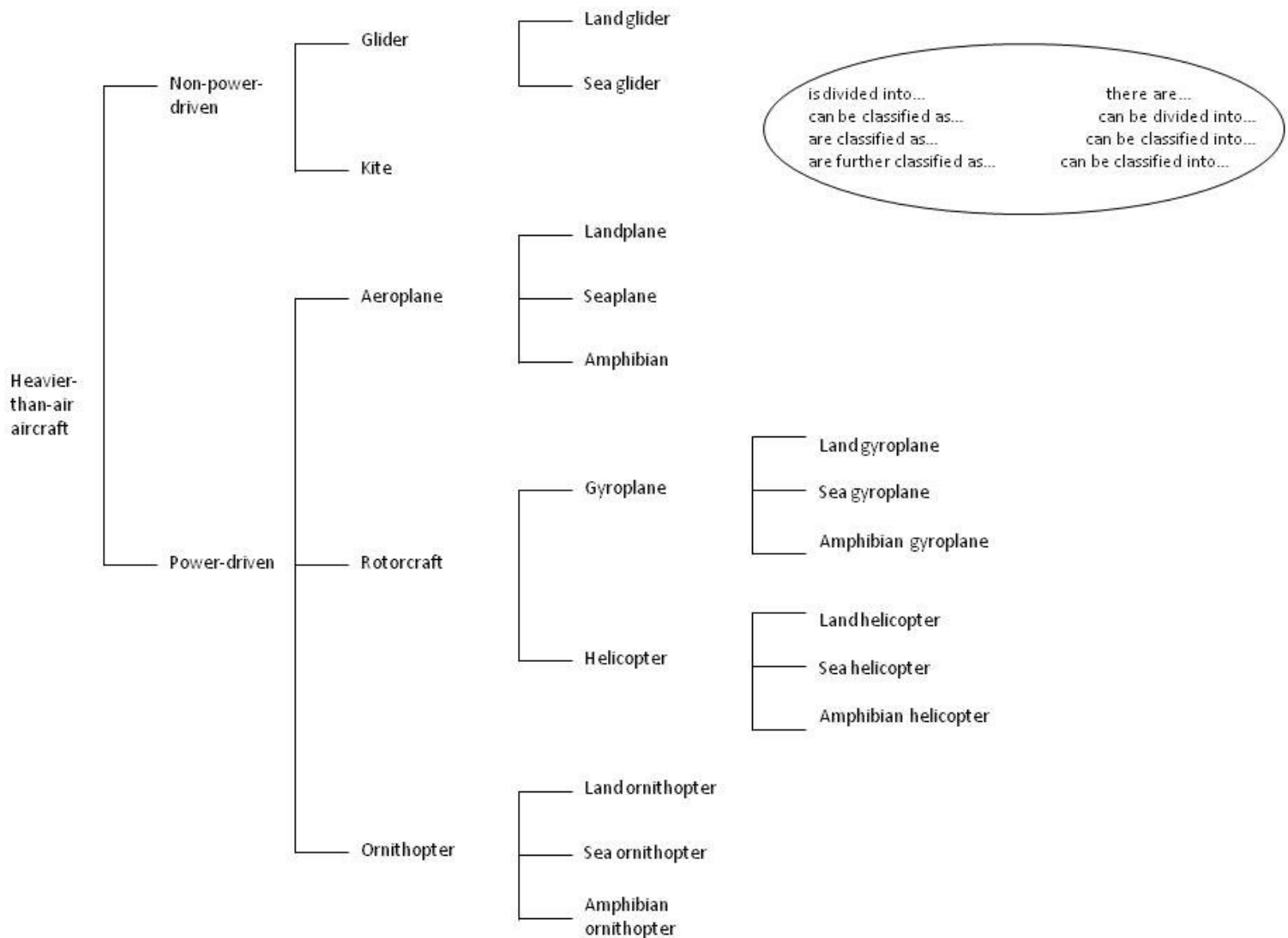
1. What terms are used in the text to denote the aerodyne and aerostat?
2. What aircraft does the first group include?
3. What kind of aircraft are airships and balloons?
4. How do aerodynes and aerostats derive support in the atmosphere?

Aircraft may be divided into two groups: heavier-than-air and lighter-than-air aircraft. The first group includes aircraft deriving their lift chiefly from aerodynamical forces. This category includes aeroplanes, rotorcraft, gliders, hang gliders, rockets, spacecraft and missiles. The second group includes airships and balloons, i.e. aircraft being supported chiefly by their own buoyancy in the air. These terms form a part of the Rules of the Air and refer to the possibilities of airspace exploitation on the part of air traffic participants. Apart from the aircraft included in the Rules of the Air, there are also aircraft which follow the classification according to their physical and aerodynamic properties.

3. Classification - Read the following classification of lighter-than air aircraft

Lighter-than-air aircraft are classified into power driven and non-power driven balloons. Non-power driven balloons can be further sub classified into free balloons and captive balloons. Airships are power driven balloons which can be subdivided into rigid, semi-rigid and non-rigid airships. Free balloons are further subdivided into spherical free balloons whereas captive balloons are further subdivided into spherical and non-spherical captive balloons.

4. After reading the text, look at the following classification tree of heavier-than-air aircraft and make a classification in the same way:



5. Explain the difference:

aerodyne - aerostat

aeroplane - airplane

hang glider - glider

spacecraft - rocket

rocket - missile

parachute - balloon

6. Translate the words in exercise 5 and match them with their paraphrases.

A power driven heavier-than-air aircraft deriving its lift in flight chiefly from aerodynamic reactions on surfaces which remain fixed under the given conditions of flight - **aeroplane**

Any machine that can derive support in the atmosphere from the reactions of the air -

A vehicle for travelling in outer space -

A heavier-than-air aircraft -

An object or weapon suitable for throwing or projecting or directing at a target -

A lighter-than-air aircraft -

A device used to slow down free fall from an aircraft, consisting of a light piece of fabrics attached by cords to a harness and stored folded until used in descent -

A class of ultra light glider type, the simplest have no control system -

A missile whose motion is due to reaction propulsion and whose flight path cannot be controlled during flight -

A power driven lighter than air aircraft -

A heavier than air aircraft which derives lift from a rotor or rotors -

A non power driven heavier than air aircraft, deriving its lift chiefly from aerodynamical reactions of surfaces which remain fixed under given conditions of flight -

A non power driven lighter-than-air aircraft -

7. Paraphrase the words from the classification tree.

Ornitopher- a heavier-than- air aircraft supported in flight chiefly by the reaction of the air on the wings, to which a flapping motion is imparted.

Gyroplane- a heavier- than- air aircraft supported in flight chiefly by the reaction of the air on one or more rotors which rotate freely on substantially vertical axes

Amphibian- an aircraft capable of taking off and alighting on either land or water

11. A comparison of the B747 and the A380

The Boeing 747 and the Airbus 380 are two large-capacity aircraft for passengers and cargo referred to as jumbo jets. They are both wide-body airplanes and their wide fuselages can accommodate two passenger aisles. These aircraft are used to operate long-haul and medium-haul flights. Both airplanes have four engines and are both double-deckers. Boeing produced the 747 for over 50 years. The aircraft was designed at the end of the 1960s and has been one of the most popular airplanes since it entered the market. The Airbus 380 is a much younger aircraft and has been in commercial operations for less than 20 years. The A380 was first flown in 2005 and it entered the market in 2007.

The B747 is 3.5 meters longer than the A380. Although the aircraft produced by Airbus is shorter, it can fit up to 50% more passengers than the B747 when they are both set up for economy seating only. This means that the B747 can transport a maximum of 604 passengers while the A380 has a maximum capacity of 868 passengers.

Boeing's jumbo jet is slightly faster than the Airbus aircraft. Its maximum operating speed limit is Mach 0.9, but the older variants can reach Mach 0.92. The A380 maximum speed limit is Mach 0.89. According to companies' manuals both aircraft have the same range, which is 8,000 miles. Older variants of the B747 have a shorter range from the new ones.

When it comes to the price, the B747 is significantly cheaper at 40 million dollars less than the A380. Since the 1960s, Boeing has sold over 1,500 of this type of aircraft. Most of these have been delivered to airlines and other operators around the world. The most popular B747 is the American presidential airplane known as "Air Force One". Since early 2000, Airbus has sold 300 of the A380s. Emirates has purchased most of them.

The B747 might seem like a better aircraft from an economical and operational point of view, but the A380 was designed to cater to passengers' needs. It has the quietest and most spacious cabin among wide-body commercial airplanes. Most aircraft keep their cabin pressurization at 8,000 feet above sea level, which can reduce the amount of oxygen in the blood by 4%. The A380 can keep its cabin pressure around 6,000 feet above sea level, which improves the passengers' comfort significantly.

The A380 is very popular among passengers and remains an icon that is unrivaled in terms of customer experience. Unfortunately, the A380 is too big, too expensive, and too inefficient for most airlines. Because of that, Airbus has decided to end production of the A380 once present orders for the aircraft type are completed.

Specifications

Specifications	Boeing 747 – metric	Boeing 747 – imperial	Airbus 380 – metric	Airbus 380 – imperial
Length	72.5 m	238 ft 2 in	72.72 m	238 ft 7 in
Height	19.4 m	63 ft 6 in	24.09 m	79 ft 1 in
Wingspan	68.5 m	224 ft 7 in	79.75 m	261 ft 8 in
Weight	183,500 kg	404,550 lbs	277,000 kg	610,070 lbs
Max speed MMO	913 km/h	Mach 0.9	903 km/h	Mach 0.89
Range	14,800 km	8,000 mi	14,800 km	8,000 mi

VOCABULARY

capacity – the maximum amount that can be contained or accommodated

jumbo jet – a wide-body jet airliner that can carry hundreds of passengers

fuselage – the main body of an aircraft

aisle – a walkway between rows of seats in an airplane

double-decker – something that has two floors or levels

maximum operating speed limit – a speed that must not be intentionally exceeded in any stage of flight (climb, cruise, or descent)

variant – an aircraft or a group of aircraft under the same name that has significant updates and changes from the original design

Mach – a measurement of speed based on how close to the speed of sound the object is moving

manual – a book of instructions explaining how to operate a machine or vehicle

range – the maximum distance an aircraft can fly

aircraft type – a particular model of aircraft including variants

to cater – to provide what is wanted or needed by someone

cabin pressurization – a process in which conditioned air is pumped into the cabin of an aircraft in order to create a safe and comfortable environment for passengers and crew flying at high altitudes

oxygen – a colourless, odourless, tasteless gas essential for breathing in living organisms

icon – a person or thing regarded as a representative symbol or as worthy of recognition

inefficient – not worth the effort required to produce the desired effect

wingspan – the distance from the tip of one wing to the other

UNDERSTANDING

Check your understanding of the text by answering if the following sentences are TRUE (T) or FALSE (F).

- a) The A380 entered the commercial market in 2005.
- b) The B747 wingspan is wider than the wingspan of the A380.
- c) Most of the A380s have been bought by Emirates.
- d) The A380 is the most popular jumbo jet for passengers.
- e) The A380 production continued once present orders are completed.

LANGUAGE FOCUS – HOW TO SAY IT

Airplane types

B747 – “B seven four seven” or “B seven forty-seven”; “seven four seven” or “seven forty-seven”

A380 – “A three eighty”

737-800 – “seven three seven eight hundred”

737-Max – “seven three seven MAX”

Speed: Mach 0.92 – “Mach decimal nine two”

Altitude: 18,000 ft – “eighteen thousand feet”; 1,500 ft – “fifteen hundred feet” or “one thousand five hundred feet”

Years: 1960s – “nineteen sixties”; “in the 60s” – “in the sixties”

UNITS OF MEASUREMENT

In the aviation industry, both metric and imperial units of measurement are currently used.

Knots and nautical miles remain the standard measurements of speed and distance respectively.

A nautical mile (nm) is 1,852 meters or 6,076 feet.

A knot (kt) is 1 nm/h (nautical mile per hour) or 1.852 km/h (kilometers per hour).

A meter (m) is 3.28 feet (ft), and 1 foot (ft) is 0.3048 meter (m).

One meter is 100 centimeters (cm), and 1 foot is 12 inches (in).

1 kilogram (kg) is 2.2 pounds (lbs) and 1 pound (lb) is 0.45 kilograms.

1 kilogram is 1000 grams and 1 pound is 16 ounces (oz).

Rewrite the following sentences using full words for measurement units. Look at the example below.

Example: 5 lb is 2.26 kg. → 5 pounds is equivalent to 2.26 kilograms.

a) 150 kt is 150 nm/h. → _____

b) 100 kt is 185 km/h. → _____

c) 1 ft is 12 in. → _____

d) 1 lb is 16 oz. → _____

e) The A380 has a wingspan of 261 ft 8 in. → _____

f) The A380 has a range of 8,000 nm. → _____

g) The plane's altitude is 12,000 ft. → _____

12. Types of airliners



Airliners

Big and Small

AVIATION Today

If you plan to fly for an airline, you'll probably pilot one of two types of **civil aircraft**. One type is a **narrow-body airliner**. These planes have a cabin width of three to four meters and one passenger aisle. They are **regional airliners**, also known as **feederliners**. **Regional jets** are similar. The only difference is that they have jet engines instead of turboprops. The smallest narrow-body airliners, **commuterliners**, seat fewer than twenty passengers.

The other major type of civil aircraft is the **wide-body airliner**. Multiple **turbofan** engines power these large planes. They have a cabin width of five to seven meters and twin passenger aisles. The seats in wide-body airliners are often separated into multiple **cabin classes**.

Get ready!

1 Before you read the passage, talk about these questions.

- 1 What are some types of airliners?
- 2 What are some different engines that power a plane?

Reading

2 Read the magazine article on types of airliners. Then, mark the following statements as true (T) or false (F).

- 1 ___ Feederliners seat fewer passengers than commuterliners.
- 2 ___ Commuterliners have a single aisle for passengers.
- 3 ___ A wide-body airliner has multiple aisles, classes, and turbofan engines.

Vocabulary

3 Match the words and phrases (1-6) with the definitions (A-F).

- | | |
|-------------------|----------------------------|
| 1 ___ turboprop | 4 ___ wide-body airliner |
| 2 ___ turbofan | 5 ___ narrow-body airliner |
| 3 ___ cabin class | 6 ___ civil aircraft |

- A a turbine engine that propels an aircraft by driving a fan
- B a category of aircraft seats based on price and services
- C a passenger aircraft with two passenger aisles and a cabin width of 5 to 7 meters
- D an aircraft intended for non-military uses
- E a passenger aircraft with one passenger aisle and a cabin width of 3 to 4 meters
- F a turbine engine that propels an aircraft by driving a propeller

- 4 Read the sentence pairs. Choose which word or phrase best fits each blank.

1 Commuterliners / Feederliners

- A _____ can carry twenty passengers or less.
 B _____ vary in size, but none carry more than 100 passengers.

2 regional jet / regional airliner

- A The turboprop on the _____ failed.
 B A _____ has a turbofan, not propellers.

- 5 Listen and read the magazine article on types of airlines again. What are the traits of a wide-body airliner?

Listening

- 6 Listen to a conversation between an interviewer and a pilot. Choose the correct answers.

- 1 What is the conversation mainly about?
 A the aircraft the man has flown
 B how the man trained to become a pilot
 C why the man prefers flying turboprop engines
 D the differences between narrow-body airliner types
- 2 What does the man say of wide-body planes?
 A He does not fly them anymore.
 B They use two turboprop engines.
 C They require more training to fly.
 D He thinks they fly just like narrow-body airliners.

- 7 Listen again and complete the conversation.

Interviewer: Captain Michaels, thanks for speaking with me. So, during your career have you flown different types of aircraft?

Pilot: I have. I 1 _____ fly narrow-body airliners. But now I fly wide-body planes.

Interviewer: I see. Is flying the 2 _____ different?

Pilot: It is. The smaller planes only have two turboprop engines. There's 3 _____ wing.

Interviewer: And how about the larger planes?

Pilot: Most of those 4 _____ four turbofans.

Interviewer: Okay, 5 _____ power. Does that make them more difficult to fly than narrow-body airliners?

Pilot: Somewhat, yes. It just requires 6 _____ training.

Speaking

- 8 With a partner, act out the roles based on Task 7. Then, switch roles.

USE LANGUAGE SUCH AS:

Now I fly ...

The smaller planes have ...

Does that make them more difficult to fly?

Student A: You are an interviewer. Talk to Student B about:

- types of aircraft he or she has flown
- engine differences
- difficulty flying

Student B: You are a pilot. Talk to Student A about aircraft types you have flown.

Writing

- 9 Use the conversation from Task 8 to complete the interviewer's notes.

Interviewer's Notes

Pilot Name: _____

Types of aircraft flown: _____

Currently flying: _____

Engine types currently used: _____

Other comments: _____

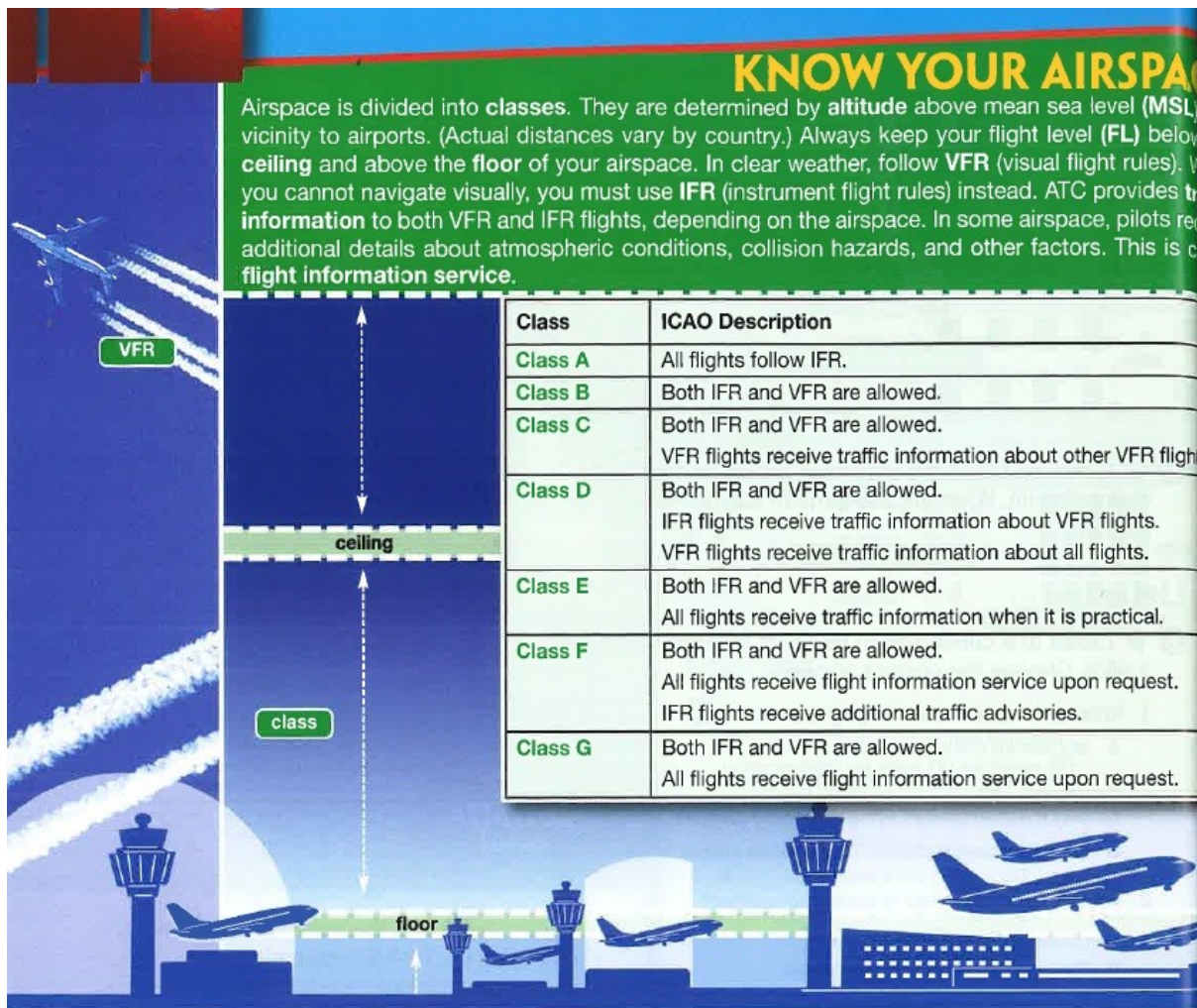
13. Types of airspace



KNOW YOUR AIRSPACE

Airspace is divided into **classes**. They are determined by **altitude** above mean sea level (MSL) in the vicinity to airports. (Actual distances vary by country.) Always keep your flight level (**FL**) below **ceiling** and above the **floor** of your airspace. In clear weather, follow **VFR** (visual flight rules). If you cannot navigate visually, you must use **IFR** (instrument flight rules) instead. ATC provides **traffic information** to both VFR and IFR flights, depending on the airspace. In some airspace, pilots receive additional details about atmospheric conditions, collision hazards, and other factors. This is called **flight information service**.

Class	ICAO Description
Class A	All flights follow IFR.
Class B	Both IFR and VFR are allowed.
Class C	Both IFR and VFR are allowed. VFR flights receive traffic information about other VFR flights.
Class D	Both IFR and VFR are allowed. IFR flights receive traffic information about VFR flights. VFR flights receive traffic information about all flights.
Class E	Both IFR and VFR are allowed. All flights receive traffic information when it is practical.
Class F	Both IFR and VFR are allowed. All flights receive flight information service upon request. IFR flights receive additional traffic advisories.
Class G	Both IFR and VFR are allowed. All flights receive flight information service upon request.



Get ready!

- 1 Before you read the passage, talk about these questions.
 - 1 What is an example of a class of airspace in your country?
 - 2 Why are the floor and the ceiling important when defining airspace?

Reading

- 2 Read the poster. Then, mark the following statements as true (T) or false (F).
 - 1 ☐ A class of airspace is partly determined by the distance from an airport.
 - 2 ☐ Different countries define classes of airspace differently.
 - 3 ☐ Pilots must follow VFR when the surroundings are not visible.

Vocabulary

- 3 Match the words or phrases (1-4) with the definitions (A-D).

- 1 ☐ IFR
- 2 ☐ flight information service
- 3 ☐ class
- 4 ☐ traffic information

- A details about the movements of other aircraft
- B rules that govern flights under conditions of poor visibility
- C a type of airspace with particular rules
- D details about atmospheric conditions and activities on the ground

- 4 Read the sentence pairs. Choose which word or phrase best fits each blank.

1 floor / ceiling

- A The highest point of an airspace is the _____.
- B Never fly below the _____ without permission from ATC.

2 altitude / MSL

- A What _____ will the airplane cruise at?
- B The airplane will cruise at 20,000 feet above _____.

3 VFR / FL

- A _____ indicates an aircraft's altitude.
- B _____ should not be used in thick clouds or severe storms.

- 5 Listen and read the poster again. What can a pilot do in clear weather?

Listening

- 6 Listen to a conversation between a pilot and an air traffic controller. Choose the correct answers.

- 1 What is the purpose of the conversation?
- A to get clearance to enter an airspace
- B to determine what airspace the pilot is in
- C to inform a controller of an airspace violation
- D to instruct an aircraft to leave restricted airspace
- 2 What information does the controller repeat?
- A the airspace
- B the frequency
- C the approach heading
- D the clearance approval

- 7 Listen again and complete the conversation.

Pilot: Westland Approach, Sparrow 17 entering 1 _____.

Controller: Sparrow 17, Westland Approach. What is your 2 _____?

Pilot: Westland Approach, 3 _____ through Bravo airspace.

Controller: Sparrow 17, 4 _____ the class Bravo airspace. Contact Westland Tower on 120.3.

Pilot: Westland Approach, 5 _____ 123?

Controller: Negative, Sparrow 17. Contact Tower on 120.3.

Pilot: 6 _____, Westland Tower on 120.3.

Speaking

- 8 With a partner, act out the roles below based on Task 7. Then, switch roles.

USE LANGUAGE SUCH AS:

Entering ...

Cleared through ...

Contact ... on ...

Student A: You are a pilot. Talk to Student B about:

- entering an airspace
- obtaining clearance
- what to do next

Student B: You are an air traffic controller. Talk to Student A about entering an airspace.

Writing

- 9 Use the conversation from Task 8 to complete the approach control log.



Approach Control Log
Entry 918

Date: _____

Aircraft callsign: _____

Aircraft intent: _____

Actions taken: _____

Directions given: _____

14. Flying with the birds

Gliding birds, hawks, eagles, gulls and vultures are doing the same thing glider pilots do - looking for lift. The main difference is that they are far better at that than the pilots. So if you see a group of long-winged birds circling in one spot, just fly in that direction. You will find a good thermal there almost every time and can join in their frolic. The birds usually watch you, as you watch them. When they decide you are not a threat, they usually go about demonstrating their innate flying superiority, by tapping the strongest lift right in the core of the thermal, climbing rapidly above us.

What is a typical glider flight like? In most cases, the glider is hooked up to a powered airplane which tows it up to an altitude of 2,000 - 3,000 feet. When desired, the glider pilot releases the rope, although the powered airplanes can also release if safety demands it. After release, the tow airplane departs, taking its noisy engine with it. The pilot then searches for lift. Very strong wind might create dust devils or clouds of debris. If there are cumulus clouds about, these are very good indicators of thermal activity, either current or past. Another glider circling in one spot is often a good indicator of an active thermal. Sometimes the pilot will simply forge ahead and blunder into a thermal by chance - if thermal heights are substantial, then this is actually a viable way of soaring.

1. Put these in the correct sequence. The first one has been done for you.

- | | |
|---|--------------|
| 1 Releasing the rope | _____ |
| 2 The tow airplane departs | _____ |
| 3 The birds looking for lift | _____ |
| 4 The birds watching us | _____ |
| 5 Searching for lift | <u> 1 </u> |
| 6 A glider circling in one spot | _____ |
| 7 Very strong lift creating dust devils or clouds of debris | _____ |
| 8 Blundering into a thermal by chance | _____ |

2. Read again and answer these questions.

- 1 Which soaring birds did the speaker mention?
- 2 Why do glider pilots fly in the direction of circling birds?
- 3 Are birds afraid of gliders?

3. Match the terms in column A with their synonyms in column B.

A	B
1. Gliding 2. Kite 3. Flight deck 4. Tail rotor 5. Radio compass 6. Vertical stabilizer 7. Landing gear 8. Aerostat 9. Rate-of-climb indicator 10. Close the throttle	a. Undercarriage b. Automatic direction finder c. Throttle back d. Soaring e. Lighter-than-air aircraft f. Cockpit g. Antitorque rotor h. Fin i. Variometer j. Hang glider

15. Gliding

Sailplanes or gliders are aircraft designed to use only aerodynamical forces to stay aloft. They are without engines, like hang gliders or ultra lights which often create an image of flimsy aluminium wires and frames; unlike them, gliders are advanced aircraft with fixed flexible wings and an enclosed cockpit. Today's high performance gliders may cover hundreds of miles at speeds more than 100 knots. They can also be equipped with engines as well as hang gliders and ultra lights.

The mechanics of flying gliders may be considered the same as the mechanics of flying powered aircraft; however, glider flights require constant alertness to changing altitudes, wind drift and atmospheric conditions to make the glider back to the gliderport or to a safe field on a cross-country flight.

Not only a high level of flying proficiency but also good knowledge of weather is required for gliding. The most common lift sources are thermals, which pilots flying powered aircraft often consider as annoying turbulence. The conditions under which thermal gliding is possible vary; thermals may be large or small, strong or weak, smooth or rough, and circular or otherwise in cross section. These varying conditions demand different techniques.

1. Decide if the following statements are TRUE (T) or FALSE (F):

- Gliders are supported only by aerodynamical forces to stay in the air.
- Hang gliders and ultra lights have cockpits.
- Hang gliders have fixed wings.
- Gliders make use of atmospheric conditions.
- Thermals are considered as unpleasant turbulence by glider pilots.
- Flying techniques depend on atmospheric conditions.

2. Answer the following questions.

- 1 Define the term "glider".
- 2 In what way do they differ from hang gliders and ultra lights?
- 3 At what speed do today's aircraft travel?
- 4 What is a major requirement for gliding?
- 5 Which are the most common lift sources?
- 6 Why is good knowledge of meteorology essential for gliding?

3. Find words in the text similar in meaning to the ones in bold type. Rewrite the sentences using the new words.

1 Gliders are **sophisticated** aircraft with fixed flexible wings.

2 Aerodynamical forces keep the glider **in the air**.

3 Like gliders, **dragons** and ultra lights have no engine.

4 **Different** conditions require different techniques.

5 The conditions under which thermal soaring is possible **change**.

6 Gliders are **manufactured** to use only aerodynamical forces to stay aloft.

7 The conditions under which thermal gliding is possible **call for** different techniques.

8 Ultra lights often create an image of **thin and easily thorn** aluminium wires and frames.

16. Aerodrome

1 An aerodrome is a defined area on land or water (including any buildings, installations and equipment) intended to be used wholly or in part for the arrival, departure and surface movement of aircraft. According to the type of aerodrome we can distinguish land aerodromes and water aerodromes. Both of them can be further divided into civil and military aerodromes. The location of an aerodrome which is very important with respect to noise abatement, meteorological conditions and obstructions is called the aerodrome site. Pilots are provided with all essential details about the aerodrome, including aerodrome elevation and aerodrome reference points in special aerodrome charts.

2 Aircraft and other vehicles, called aerodrome traffic, operate on the manoeuvring and movement area of an aerodrome. The area comprising of runways and taxiways and the apron(s) is the movement area. Air traffic comprising also all aircraft in flight operates on the manoeuvring areas. The manoeuvring area is that part of aerodrome to be used for the take-off and landing of aircraft and for the surface movement of aircraft associated with take-off and landing, excluding aprons. It may be all grass or it may contain paved or unpaved runways, taxiways and holding positions or bays. Nearly all important aerodromes have runways and taxiways and nowadays most of them are paved concrete or asphalt or both.

3 At most major aerodromes movement of aircraft is confined to runways and taxiways. A runway is a defined area, on a land aerodrome, prepared for the landing and take-off of aircraft. It may be a non-instrument runway, i.e. a runway used by aircraft using visual approach procedures, or it may be an instrument runway i.e. a runway used by aircraft using non-visual aids. Instrument approach runways may be classified into non-precision approach runways, served by non-visual aids providing at least directional guidance for a straight-in-approach e.g. ADF, VOR, SRA, and precision approach runway, served by ILS and visual aids.

4 Taxiways are used for taxiing and to provide a link between one part of the aerodrome and another. Rapid taxiways are connected to a runway at an acute angle and designed to allow landing aeroplanes to turn off at higher speeds thus minimizing runway occupancy and taxiing time.

1. Skim the text to find which paragraph contains information on these aspects.

- | | |
|---|-------|
| a. Reducing the taxiing time | _____ |
| b. The function of the manoeuvring area | _____ |
| c. The classification of aerodromes | _____ |
| d. Essential details about the aerodromes | _____ |
| e. The connection between one part or the aerodrome and another | _____ |
| f. Types of runways and taxiways | _____ |
| g. The significance of the aerodrome layout | _____ |

2. Find the difference in meaning between these aviation terms:

1 air traffic - aerodrome traffic

2 manoeuvring area - movement area

3 instrument runway - non-instrument runway

4 precision approach runway - non-precision approach runway

3. What do you know about aerodromes?

1 What kinds of aerodromes do we know?

2 Why is the location of an aerodrome important?

3 What essential details for flight preparation should pilots be provided with?

Where can they find them? What do they mean?

4 Are all manoeuvring areas paved today?

4. Using the text, define the following terms:

Aerodrome

aerodrome site

taxiway

rapid taxiway

runway

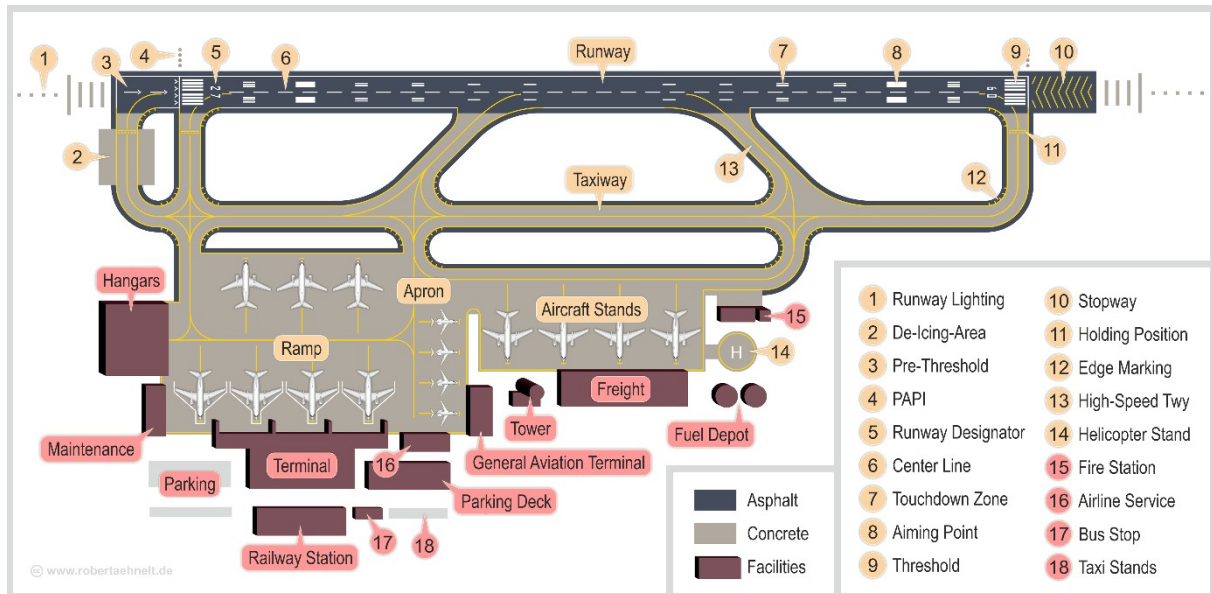
aerodrome chart

manoeuvring area

air traffic

aerodrome traffic

5. Define the parts of an aerodrome.



THRESHOLD, MANOEUVRING AREA, HOLDING POSITION, APRON or RAMP, TARMAC, TAXIWAY, RUNWAY, MOVEMENT AREA, STOPWAY, STANDS

1 The part of an aerodrome used for take-off, landing and taxiing of aircraft. _____

2 The part of aerodrome consisting of the manoeuvring area and apron(s). _____

3 A defined rectangular area on land aerodrome prepared for the landing and take-off of aircraft.

4 The beginning of the runway usable for landing at the approach end. _____

5 The area at the upwind end of the runway where an aircraft can be stopped in the event of an interrupted take-off. _____

6 A defined path on a land aerodrome established for the taxiing of the aircraft. _____

7 A defined area to accommodate aircraft during the loading and unloading of passengers (terminal apron) or cargo (cargo apron), parking (parking apron) or maintenance (service apron). _____

8 The point on the taxiway where departing aircraft wait for permission to go onto the runway.

9 The fixed places on the apron where aircraft wait during the disembarkation and embarkation of passengers. _____

10 A colloquial expression for aircraft parking area, usually in front of a hangar. _____

17. Airport design

Airports should be designed to ensure orderly service and development to the maximum capacity without having to pull down what is already there. The various parts should be grouped in such a way that each can be expanded logically to keep pace with the overall expansion.

Siting of airports

The general location of airports is influenced by geographical features, distribution of population and availability of ground transport. The number and type of aircraft required to carry the traffic determines the size of an airport, and its capacity is related to the surrounding airspace by the orientation of its runways creating certain traffic patterns.

Orientation and layout of runways

Runways are oriented in relation to prevailing winds taking into account their direction and velocity, so they wouldn't be strong enough to prevent aircraft taking off and landing. Atmospheric pressure, temperature and humidity do not directly affect the orientation of runway but they do affect their length. Lower density requires higher speed for a given total lift and take-off distances are longer. The height above the sea level determines the atmospheric pressure and air density. The humidity affects the work of piston aircraft which lose power and require longer take-off distances. A single runway may be inadequate because crosswinds make it unusable or it cannot accommodate all the traffic. The best layout for two runways is when they are sited parallel to each other; the intersecting layout should be avoided.

Terminal buildings

Terminal buildings are usually sited close to the aircraft stands on the terminal apron and close to each other so that passengers do not have to walk far. At the same time they should be close to the main surface connections to the city. The buildings are usually designed to separate arriving and departing passengers. Sometimes there are even different road levels for arrivals and departures. The organization of ground transport bringing passengers and freight to and from the terminal buildings is a major problem. Private cars must be allowed to load and unload, and public transport vehicles should have close access to the terminal buildings. There must be both short- and long-term parking facilities provided.

A terminal building should have space for receiving outgoing and incoming passengers and their luggage; space for completing state formalities concerned with international travel, and space for the passengers waiting to board aircraft or surface transport. The requirements for outgoing passengers are a waiting hall or lounge; ticket, enquiry and check-in counters; baggage reception, weighing and labelling equipment; food and drink arrangements; amenities such as toilets, money exchange, etc. The reception area for incoming passengers is less elaborate as it does not need the same provision for check-in. The state control on travellers usually calls for space for emigration and immigration offices, including interrogation rooms, offices and security rooms. Health control calls for interrogation rooms, offices and a quarantine area. Customs control requires a main customs hall, offices and a search room.

The assembly areas for passengers waiting to board the aircraft require a waiting lounge, catering areas and amenities such as telephones, toilets, etc. For incoming passengers this assembly area also requires equipment for the collection of baggage.

1. Which paragraphs deal with:

- airport design _____
- location _____
- the size and capacity of an airport _____
- the orientation of runway _____
- the length of runway _____
- the layout of runway _____

2. Answer the questions:

What should the airport design ensure?

What affects the airport location?

What affects the orientation and length of the runways?

Why are two runways better than a single runway?

Why is the parallel layout better than intersecting?

3. Fill in the gaps:

Terminal buildings are situated close to aircraft _____ on terminal apron, close to each other so that the passengers don't have to _____ far and close to surface _____.

Terminal building should provide space and _____ for incoming and _____ passengers and their _____.

The requirements for outgoing passengers are:

- waiting hall or _____
- ticket, enquiry and check-in _____
- baggage _____; weighing and _____ equipment
- food and drink arrangements, toilets, money _____

The incoming passengers do not need _____ counters, but the assembly area requires equipment for the _____ of baggage (conveyor belts).

The _____ control on travellers includes emigration and immigration offices, _____ room, security rooms. Health control includes interrogation room and _____ area. Custom control _____ a main custom hall, offices and a _____ room.

4. Compare and paraphrase the following words:

single / parallel/ intersecting runway

aerodrome/airport

requirements for incoming/ outgoing passengers

state control/ health control customs control

5. Write an essay about Zagreb airport (location, runway, terminal building...)

18. King Fahd International Airport

King Fahd International Airport in Saudi Arabia is the biggest airport in the world and is known by its International Civil Aviation Organization (ICAO) code OEDF. It stretches across 192,000 acres of land and is located a few miles northwest from downtown Dammam. The airport is in the middle of the desert, surrounded by a lot of sand and not much water. The climate is dry as the airport receives small amount of rain. This is the largest airport in the world by area, but it is only the third busiest airport in Saudi Arabia and it is not even listed among the 50 busiest airports in the world. The airport was primarily built as a US military airbase and it was turned into a civil airport in 1999.

OEDF has two parallel runways. The runways are 4-kilometer (13,000 ft) long and 60-metre (200 ft) wide. The airport property includes a number of taxiways and aprons. One taxiway crosses and links the two runways. The general aviation terminal building is located on the west side of the runways. Along the runways, on the opposite side from the terminal building are the maintenance facilities and buildings supporting the airlines and the airport operations. These operations include the Saudi Aramco Terminal.

Saudi Aramco is a company that supplies and maintains the fuel facilities at the airport. Its fuel system includes six massive tanks, a large amount of pumping equipment, and a number of filters to distribute the fuel. The company also owns a fleet of fuel tankers to provide fuel to commercial airplanes. The east runway is designated for Saudi Aramco operations. This company has regular flights for its personnel to numerous cities in the region and operates flights to many remote pump stations using a Boeing 737.

OEDF's most frequent route is the one to and from Dubai, consisting of 70 flights per week. The flight between King Fahd International Airport in Saudi Arabia and Bahrain International in Manama is considered one of the world's shortest international flights. It covers 76 kilometers and takes 45 minutes from gate to gate.

At the King Fahd International Airport one can visit a mosque situated on top of the underground car park in front of the main terminal. The mosque is surrounded by busy roads with a lot of traffic and it is connected with the passenger terminal via airbridges. OEDF is the largest airport in the world by area, however there is little traffic in and out of the terminal. Only few airlines operate out of this airport.

VOCABULARY

military airbase – a facility owned and operated by the military that houses military equipment and personnel for training and operations

civil airport – a complex of runways and buildings to support commercial private aircraft, with facilities for passengers

parallel – two straight lines extending side-by-side and having the same distance continuously between them

taxiway – usually a paved strip at the airport used by aircraft to get from the terminal to the active runway

apron – the area of the airport where aircraft are parked

to link – to make a connection between two things

to supply – make something available to someone or something

to maintain – to take care of something and to protect from breaking

fleet – vehicles or aircraft operating under the same ownership

fuel tanker – a large truck used for transporting large quantities of fuel

remote – a place situated far from the main centers of population

pump station – a place with equipment for pumping fluids from one place to another

frequent – occurring or done on many occasions

underground car park – a parking area built below ground level

UNDERSTANDING

Check your understanding of the text by answering if the following sentences are TRUE (T) or FALSE (F).

- a) King Fahd International Airport is the busiest airport in Saudi Arabia.
- b) There are three operating runways at King Fahd International Airport.
- c) Saudi Aramco uses the east runway for their operations.
- d) A mosque is located under the car park.
- e) The closest city to the airport is Dammam.

19. Parts of an airport



Get ready!

1 Before you read the passage, talk about these questions.

- 1 Which part of an airport does the airplane land on?
- 2 Where do passengers wait to board their flight?

Reading

2 Read the sign. Then, choose the correct answers.

- 1 What is the purpose of the sign?
 - A to inform employees of emergency procedures
 - B to direct passengers to their flights
 - C to inform employees of airport policies
 - D to prevent passengers from entering secured areas
- 2 Which of the following is NOT stated on the poster?
 - A Show ID badge to pass security.
 - B Keep flames away from fuel depot.
 - C Keeps concourses clean.
 - D Employees need security clearance to enter customs.
- 3 Which area requires employees to sign in?
 - A the hangar
 - C customs
 - B the fuel depot
 - D the control tower



— New Employees —

Welcome to Brighton International Airport

- 1 Use employee hallways to reach **terminals** and **gates**.
- 2 Employees need ID badges to enter **customs**.
- 3 Show ID badges to pass **security checkpoints**.
- 4 Employees must have Level-M security clearance to enter the **control tower**.
- 5 Remember, the **runway** and **taxiway** are **restricted** areas. (This doesn't apply to ground controllers and mechanics).
- 6 All employees must sign in when entering the **hangar**.
- 7 No smoking or open flames near the **fuel depot**.
- 8 Keep **concourses** clean by disposing of all trash.

Brighton International thanks you for your cooperation. Your compliance ensures a safer work environment for all!

Vocabulary

3 Match the words or phrases (1-6) with the definitions (A-F).

- | | |
|--------------------|-----------------|
| 1 __ concourse | 4 __ restricted |
| 2 __ customs | 5 __ taxiway |
| 3 __ control tower | 6 __ terminal |

- A an area where luggage from foreign destinations is checked
- B a part of a terminal that contains gates
- C a road that connects parts of a runway
- D not open to the general public
- E a place where passengers get off or on a plane
- F a building in which employees direct air traffic

- 4 Fill in the blanks with the correct words or phrases from the word bank.

Word BANK

security checkpoint gate
hangar fuel depot

- 1 Passengers have to go through the _____ before boarding the plane.
- 2 The plane is stopping at the _____ to get more gas.
- 3 The people are waiting at their _____ to board their plane.
- 4 The airline moved the damaged airplane to the _____.

- 5 Listen and read the sign again. What areas are restricted?

Listening

- 6 Listen to a conversation between an air traffic controller and a pilot. Then, mark the following statements as true (T) or false (F).

- 1 ___ Another plane is at the man's original gate.
- 2 ___ The woman asks the man to take off from another runway.
- 3 ___ The man is told to contact Ground control.

- 7 Listen again and complete the conversation.

Controller: JetFlight 117, Hartford Ground, 1 _____.

Pilot: JetFlight 117, go ahead.

Controller: JetFlight 117, your 2 _____ is unavailable. That was Terminal A, Gate 87. GoAir Flight 87 is there and unable to taxi out.

Pilot: Roger, JetFlight 117. Request gate 3 _____.

Controller: JetFlight 117, taxi to Terminal B, Gate 22. Use 4 _____ C7.

Pilot: Wilco, 5 _____ to Terminal B, Gate 22 on taxiway C7.

Controller: Affirmative, JetFlight 117. 6 _____ Ground control on 121.9.

Speaking

- 8 With a partner, act out the roles below based on Task 7. Then, switch roles.

USE LANGUAGE SUCH AS:

Request gate reassignment ...

Taxi to ...

Contact ...

Student A: You are a controller. Talk to Student B about:

- a problem at a gate
- taxiing to a new terminal
- what to do next

Student B: You are a pilot. Talk to Student A about your gate assignment.

Writing

- 9 Use the conversation from Task 8 to complete the entry in a pilot's log.

Pilot's Log

Date: _____

Name: _____

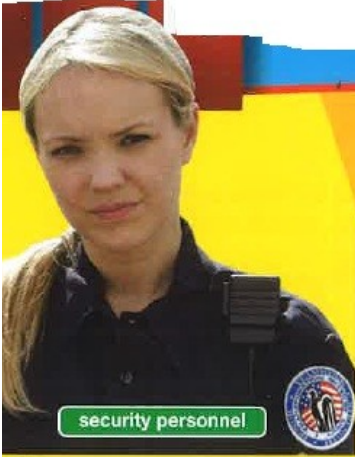
Flight number: _____

Notes/Changes

We were supposed to unload passengers at Gate _____ in _____.

That gate was unavailable upon landing. Another aircraft could not taxi out. Ground reassigned us to _____ in _____ and directed us to contact _____.

20. People in an airport



security personnel



screener

Employment Opportunities

Thank you for your interest! We are looking to fill the following positions:

Glendale Airport Positions:

- **Airplane mechanic:** Mechanics' duties include inspecting aircraft, performing routine maintenance, and making repairs.
- **Ground controller:** This position involves coordinating air traffic on the taxiways.
- **Customs agent:** The agent will inspect goods entering or leaving the country.
- **Security personnel:** These employees are responsible for monitoring passengers and their luggage. This person also works as a **screener** when needed. (Security screens passengers separately from **pilots**, **copilots**, and **flight attendants**).

GlobalAir Positions:

- **Ticket agent:** Ticket agents are responsible for helping customers schedule flights. They also greet customers and resolve booking problems.
- **Cargo handler:** Cargo handlers load passengers' luggage onto the plane. Candidates must be able to lift fifty pounds.

Send a résumé and cover letter to hrrecruiters@globalair.net.



cargo handler



mechanic



ticket agent

Get ready!

- 1 Before you read the passage, talk about these questions.

- Who assists passengers during a flight?
- Who handles passengers' luggage?

Reading

- 2 Read the job listings. Then, mark the following statements as true (T) or false (F).

- ☐ Ground controllers schedule aircraft maintenance.
- ☐ Security personnel screens employees with passengers.
- ☐ Cargo handlers take care of people's luggage.

Vocabulary

- 3 Write a word or phrase that is similar in meaning to the underlined part.

- The employee who booked my flight charged me the wrong amount.
t _ c k _ _ _ g _ n t
- Because the pilot got sick, the pilot who is second-in-command had to take over.
_ _ p _ l o _
- The person who loads the luggage onto the plane accidentally tore the bag.
c a _ _ o _ a _ n _ l _ r
- The woman asked the employee who is assisting the passengers to bring her a pillow.
f l _ _ h _ a _ e n d _ _ t
- The person who directs flights for take-off and landing sent the plane to the other side of the runway. g _ o u _ _ c o _ t _ i l _ r
- The person who is trained to fly an aircraft was fifteen minutes late. _ i l _ _

4 Match the words or phrases (1-4) with the definitions (A-D).

- 1 __ screener 3 __ customs agent
2 __ mechanic 4 __ security personnel

- A a person who ensures that planes run properly
B a person who checks goods leaving/entering a country
C a person who checks passengers' luggage
D a person who ensures airports/airplanes are safe

5 Listen and read the job listings again. What are the responsibilities of mechanics and security personnel?

Listening

6 Listen to a conversation between a manager and a supervisor. Then, mark the following statements as true (T) or false (F).

- 1 __ The woman needs to hire a flight attendant.
2 __ The woman interviewed a mechanic.
3 __ The woman has an open security personnel position.

7 Listen again and complete the conversation.

- Manager:** Hi Mr. Jones. Do you have a minute to discuss the open 1 _____ ?
Supervisor: Sure. How's the recruiting going?
Manager: It's going well. I just hired a new 2 _____ .
Supervisor: Great. What positions do we still need to fill?
Manager: We still need to fill the mechanic and 3 _____ personnel positions.
Supervisor: Have you met any qualified 4 _____ ?
Manager: We haven't started 5 _____ people yet. But a couple of applicants look promising.
Supervisor: Well, keep me 6 _____ .

Speaking

8 With a partner, act out the roles below based on Task 7. Then, switch roles.

USE LANGUAGE SUCH AS:

How's the recruiting going?

We still need ...

We haven't started ...

Student A: You are a hiring manager. Talk to Student B about:

- positions you have filled
- positions you need to fill
- the interview process

Student B: You are a supervisor. Talk to Student A about the hiring process.

Writing

9 Use the conversation from Task 8 to complete the email.



From:

To:

Subject:

Hello Mr. Smith,

I hired a new _____ today. He has experience as a _____. So, he has _____ before.

I'm interviewing someone for the _____ position tomorrow. I'll let you know _____.

Best,
Sharon Taylor

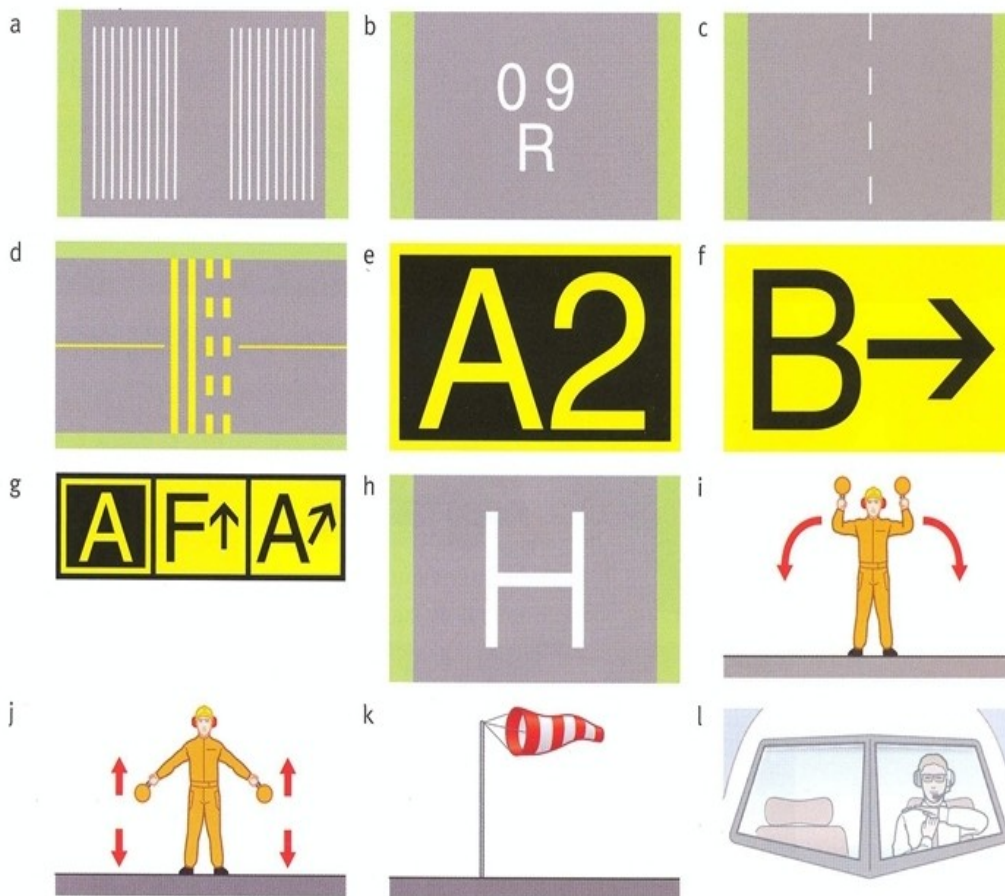
flight attendant



21. Ground movements

STARTER

Look at the signals and signs. Where do you find them? Can you say what they mean?



Match the signs and signals above with the names below.

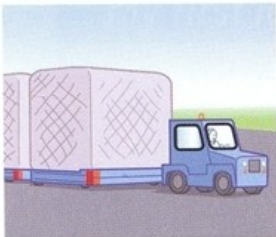
- | | |
|--------------------------------|--------------------------------|
| 1 centre line marking | 7 reserved for helicopter |
| 2 runway taxi holding position | 8 move ahead |
| 3 runway designator | 9 taxiway A changing direction |
| 4 taxiway location sign | 10 slow down |
| 5 direction sign | 11 threshold markings |
| 6 connect ground power | 12 wind direction and speed |

Now mark items 1–12 above with G (ground/surface marking), SN (sign) or SG (signal). Do you have any experience of signs or signals that were confusing or difficult to see? What was the problem?

VOCABULARY

1 Match each picture to a name and an action.

a



b



c



Vehicle		Action
1	aircraft de-icer	transporting passengers
2	bus	spraying icy wings
3	fire engine	transporting construction materials
4	flat-bed truck	reversing planes
5	fuel tanker	repairing flat tyres
6	heavy plant	putting out fires
7	maintenance truck	getting rid of compacted ice
8	push-back tug	delivering kerosene
9	snowplough	clearing debris
10	sweeper	carrying cargo

d



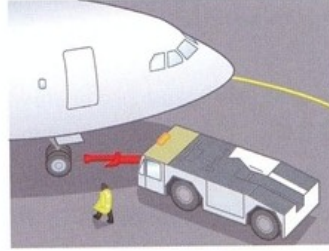
e



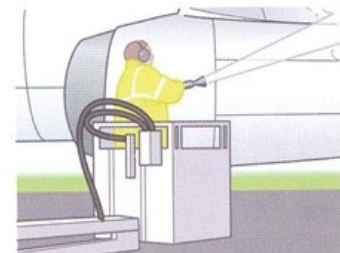
f



g



h



i



j



What is each vehicle used for? Use *is used for*.

A de-icer is used for spraying icy wings.

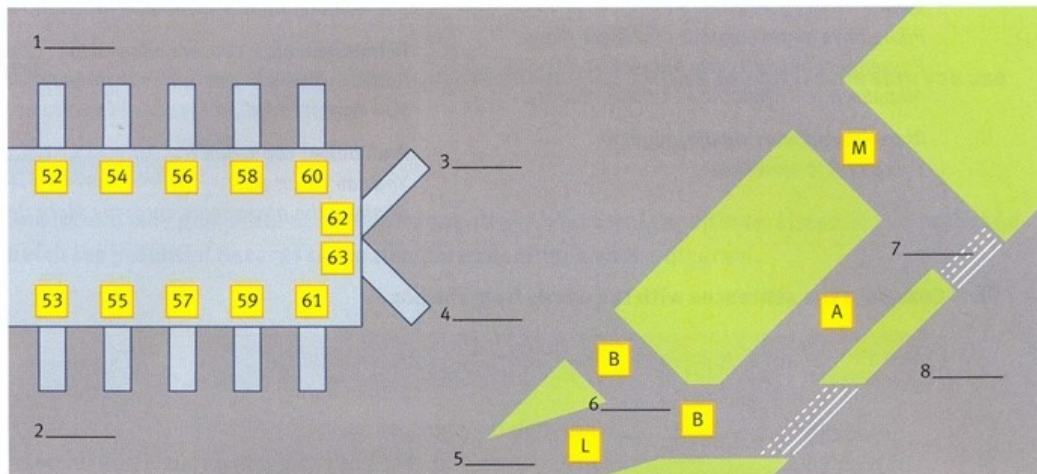
British English
snowplough
kerosene

American English
snowplow
jet fuel

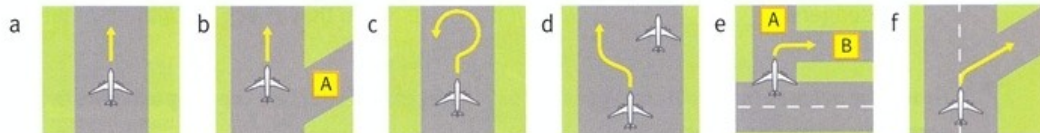


2 Listen. Where are the airside vehicles? Mark their locations.

RYR 372 • fire tender • BA Bus 5 • sweeper • de-icer • RYR 355 • UAL 439 • maintenance truck



3 Match the words and phrases for movement with the pictures.



- | | | |
|----------------------------|------------------------|-----------------------|
| 1 keep well to the left of | 3 turn on to taxiway B | 5 go straight ahead |
| 2 backtrack | 4 taxi off the runway | 6 go beyond taxiway A |

COMPREHENSION

4 Match the sentence halves.

- | | |
|-----------------------|--------------------------------|
| 1 I have to be near | a due to works. |
| 2 I have a flat tyre | b on the nose gear. |
| 3 Do you need | c a radio problem. |
| 4 I've got | d a push-back tug? |
| 5 A maintenance truck | e our maintenance area. |
| 6 Taxi with caution | f is on its way for your flat. |



Now listen and check your answers.

FLUENCY

5 Listen again. Answer the questions or discuss them with a group.

- How many planes is ground control dealing with?
- Describe the tug driver's difficulty.
- What plane does KLM 219 give way to?
- Why is the KLM pilot impatient?
- What's the difference between *Taxi slowly* and *Taxi with caution*?

- 15  *UAL 439* United 439 holding on taxiway L.
Ground United 439, hold position. There's an aircraft de-icer at stand 62 blocking your stand. BA Bus Number 5, where are you?
Bus 5 Stand 52, waiting to depart. Number 5 Bus.
Ground Roger, BA bus. Hang on. I've got a fire tender outbound at taxiway B, repeat B.
Bus 5 Roger that. Holding.
RYP 372 Ryanair 372 request push back stand 53.
Ground Push back approved, 372.
UAL 439 United 439 holding on taxiway L. Is there a problem at stand 63?
Ground Hold position, 439. There's a maintenance truck leaving your stand.
 Ryanair 355 proceed to intersection MA, hold short of the runway. Expect delay. A sweeper is still clearing runway 05.
UAL 439 United 439 holding on L.
Ground Stand by, 439.
RYP 355 Ryanair 355 holding short of runway 05.
Ground 355, line up and wait. The sweeper is leaving the runway.
 Cleared for take-off.
RYP 355 Cleared for take-off, Ryanair 355.

UNIT 3, EXERCISE 4

- 16  *Ground* Tug 3, report when ready to vacate stand 6. Lufthansa 158 approaching.
KLM 219 Ground, KLM 219 runway 24 clear. Holding. Listen, can I change stand? I have to be near our maintenance area. I have a flat tyre on the nose gear.
Ground KLM, 219, do you need a push-back tug?
Tug 3 Hang on a minute. Hello. Hello. I can't hear. I've got a radio problem. Tug 3.
Ground Lufthansa 158, slow down, taxi slowly to intersection D4. KLM 219, stand by.
DLH 158 Taxiing slowly. Stand 6 in sight and still blocked. Request stand change. Lufthansa 158.
KLM 219 KLM 219, still holding. Did you get my message? Confirm stand, please.
Tug 3 Ground, read you now. Stand 6 vacated.
Ground Tug 3.
 Roger Tug 3. Lufthansa 158, stand 6 is cleared. Proceed straight ahead. Break break KLM 219, hold position. Give way to 757 on taxiway Z.
KLM 219 Holding position, KLM 219.
DLH 158 Stand 6 confirmed. Lufthansa 158.
Ground KLM 219, stand 19 is clear. A maintenance truck is on its way for your flat. Taxi with caution due to works. Keep well to the left.
KLM 219 Stand 19. Hey, I can see lots of works. Request closest available stand. KLM 219.

22. Air Traffic Control

Jack Donnell is an air traffic controller who works in the radar room a short distance from the airport.

Q: This room is dark, Jack, and there aren't any windows. How do you know what's happening outside?

J: We watch our radar screens and we listen to the radio.

Q: I always thought you worked in tall towers with big -glass windows.

J: There is a tower, but since we've had radar the tower is used only for airfield control.

Q: I see. Here you control the aircraft when they are in the air.

J: That's right. The men in the tower control the aircraft just as they are coming in to land and when they are taking off.

Q: How do you control the aircraft when they are in the air?

J: We can see the movements of the aircraft on our radar screens, and we talk to the pilots on the radio.

Q: Why do you have two screens here?

J: The screen on the left shows the position of, the aircraft from 50 to 240 kilometres - that's about 30 to 150 miles - from the airport. The screen on the right shows their position within 50 kilometres, or 30 miles, of the airport.

Q: Are the "blips" on the screen the aircraft?

J: Yes. The white lines are an outline map of the area. The pattern of lines which shows distance is called a grid.

Q: Do you use only radar to show you the position of the aircraft?

J: No. We also use coloured cards or strips. We write down the number of the aircraft and its position on the cards. There are white cards for departing aircraft and blue ones for arriving aircraft.

Q: Do you change the information on the cards?

J: Yes, as the aircraft moves we update its position.

Q: Why do you need cards as well as radar?

J: There are two reasons. First, as a fall-back system, in case the computer that stores the data goes wrong. Second, we like to have a double-check on its position.

Q: You said that every aircraft has a number. What kind of a number?

J: Every airline has its own code word. Each aircraft has its own number. When we speak to an aircraft we use both its code and number. Together they form the aircraft's call sign.

Q: What information do you give the pilots on the radio?

J: That depends where they are. If a pilot is in radar range, we tell him what to do: how high to fly, what course to take, how fast to fly, etc.

Q: You control his movements completely, do you?

J: Only when he is in the air space we can see on our radar screens. If he is out of radar range, we can only advise him about other aircraft in the area.

Q: But, if he is out of radar range, how do you know about other aircraft in that area?

J: Pilots report their movements to us by radio. Also, every pilot must hand in a flight plan before he takes off.

Q: Must a pilot keep to his flight plan?

J: Normally he wants to - but there are occasions when he wants to change. He may wish to fly higher or take a different route to avoid bad weather. If we can fit him in with other aircraft, we'll agree to the change of his plan.

Q: You really do control the air traffic, don't you? How many aircraft does an ATC look after?

J: That depends on the size of the airport. At a small airport there are six ATCs on duty at the same time. At a big airport, like London Heathrow, there would be over 30. At London there may be 100 aircraft in controlled air space at the same time.

Q: Do so many aircraft cause you any problems?

J: Most of our work is routine. Our aim is to avoid collisions in the air by keeping height and distance between each aircraft. But bad weather is a major problem because it slows everything up. If there are a lot of aircraft waiting to land, we stack them up, one above the other, and bring them down one at a time.

Q: And there can be delays in take off, too, I suppose?

J: That's right. There can be 10, even 20 aircraft waiting to take off. They must each wait their turn.

Q: You spoke about tower being responsible for runway control. What do they do?

J: Before we had radar, all air traffic control came from the tower. Now we use it only for the final approach. When an aircraft is within 8 kilometres - say 5 miles - of the airport, we hand it over to the tower. The ATCs in the tower then bring it down and tell the pilot which runway to use and where to park.

Q: And when to take off?

J: Yes, the control of an aircraft is passed from one ATC to another.

Q: How do you control a pilot who doesn't speak English?

J: All airline pilots must speak English. English is the language of aviation.

1. Answer the questions and complete the sentences:

1 ATC controllers use: **a)** radars **b)** radios **c)** head up displays.

2 They have 2 radar screens showing: **a)** the position of an aircraft from 50-240 km of the airport
b)

3 On a radar screen they can see **a)** aircraft **b)** UFOs **c)** grid.

4 Coloured cards or stripes are used to show: **a)** the number **b)** colour **c)** position of the aircraft.

5 They are used to **a)** double-check the position of the aircraft **b)**

6 Code number of each aircraft consists of **a)** airline _____ **b)** aircraft number

7 ATC gives pilots information on how _____ and _____ to fly, what _____ to take.

8 Pilot changes his flight plan **a)** never **b)** only when he needs to.

9 There are more than 6 ATC towers at Heathrow.

10 The aim of ATC is to avoid _____ in the air by keeping _____ and _____ between each aircraft.

11 In the case of bad weather, aircraft are put in a stack and then brought _____ one _____ time.

12 ATC towers are usually responsible for

a) the whole flight

b) final approach

c) for aircraft which are 5 miles within the range of the airport

d) to suggest pilots which runway and apron to choose.

23. ATC

Skim this text and identify the paragraphs which contain the information on these topics.

1 The function of Ground Movement Control - paragraph 4

2 Equipment of Aerodrome Control Tower -

3 Transfer of arriving aircraft -

4 Controlling aircraft taking off and landing -

5 ATC sectors -

1 The series of air traffic control (ATC) services operating throughout most of the world is provided to enable the safe, orderly and expeditious flow of air and aerodrome traffic. Each air traffic services unit (ATSU) performs its own function in reference to a particular type and phase of flying.

2 The function of Aerodrome Control Tower (TWR) is to issue information and instructions to aircraft to achieve a safe and rapid flow of traffic and to assist pilots in preventing collision between aircraft in flight in the vicinity of the aerodrome traffic zone, aircraft taking off and landing, aircraft moving on the manoeuvring areas, aircraft and vehicles operating on the manoeuvring area, and aircraft on the manoeuvring area and obstructions on that area.

3 The Control Tower is equipped with many transmitters and receivers, intercommunication systems with other agencies, telephones, airport lighting switches and wind instruments. Many Visual Control Rooms (VCRs) are equipped with an Air Traffic Monitor (ATM). This is a daylight-viewing, colour radar showing the local area out to a radius of about 10 miles.

4 The aircraft moving on the apron and aircraft and vehicles on the manoeuvring area is the responsibility of Ground Movement Control (GMC) which is a function of the Control Tower, but uses a separate frequency. It also delivers ATC clearances to pilots planning IFR flights; ATC clearances can also be delivered by a further subdivision of GMC called Clearance Delivery.

5 Another function of the Tower is Approach Control, which is concerned with the traffic landing at an airport within its defined area of control. An arriving aircraft is transferred from Area to Approach Control at a specified release point. At larger airports automated and semi-automated radar approach facilities are used to smooth the running of the flow of traffic.

6 Air route traffic control centres handle en route aircraft operating under instrument flight rules (IFR) between airport terminal areas. To facilitate traffic handling, an area under the jurisdiction of the Control centre (ACC) is broken into sectors, each with its own radio frequency.

1 Check your understanding - Are these statements true or false? Correct the false ones.

1 Air traffic services are used to control air and aerodrome traffic.

2 Each air traffic service unit has a definite function.

3 The Tower controls the traffic on the manoeuvring areas.

4 All Control Towers are equipped with transmitters and Air Traffic Monitor.

5 Ground Control uses the same frequency as the Control Tower.

6 Clearance Delivery delivers different clearances.

7 Arriving traffic is controlled by Approach Control at a specific release point.

8 Control Centre consists of several sectors.

2 Match the terms listed below with the definitions:

Air Traffic Control Unit	Clearance Delivery
Area Control Centre	Ground Control
Aerodrome Control Tower	release point
Approach Control	radar

Programmes whereby pilots of departing IFR aircraft may choose to receive their IFR clearance before they start taxiing for take-off.

1 _____

A unit established to provide an approach control service for arriving or departing controlled flights.

2 _____

A unit established to provide ATC service to controlled flights in control areas under its jurisdiction.

3 _____

Radio Detection and Ranging, a device which, by measuring the time interval between transmissions and receptions of radio pulses provides information on range, azimuth and/or elevation of objects in the path of transmitted pulses.

4 _____

A generic term meaning variously, area control centre, approach control office or aerodrome control tower.

5 _____

A ground facility which detects the movement of aircraft on the airport surface, working closely with other tower positions.

6 _____

The position, time or level at which an arriving aircraft comes under jurisdiction of approach control.

7 _____

Unit established to provide air traffic control service to aerodrome traffic.

8

3 The following words and phrases are used in radio communication procedures.

Translate them into Croatian.

AFFIRM

CLEARED

COMPLY

CONFIRM

DISREGARD

EXPEDITE

HOW DO YOU READ?

I SAY AGAIN

NEGATIVE

READ

READ BACK

STANDBY

4 Which of the paraphrases mean: HOLD SHORT (OF), MAINTAIN, ROGER, ACKNOWLEDGE, WILCO

-let me know that you have received and understood the message

-continue in accordance with the condition(s) specified

-keep at a distance

-I have received all of your last transmission

-I understood your message and will comply with it .

5 What information is repeated using the same words?

Read back requirements

Example:

G: 9ADDD.CLEARED TO LAND.

RUNWAY 28. WIND 280/6 KNOTS. REPORT RUNWAY VACATED.

A: CLEARED TO LAND, RUNWAY 28.

WILCO. 9ADDD.

G: 9ADDD CORRECT.

6 Translate the messages:

A

P: Canadair 221. Overhead Brad at 300 feet. Commencing mission.

T: Canadair 221. Roger. Report mission completed.

P: Canadair 221. Wilco.

B

A: 9ADDA PASSING 4000 feet, CLIMBING TO 8000 feet

G: 9ADDA (ROGER)

C

A: REQUEST TOW (company name), (aircraft type) FROM (position) TO (position)

G: TOW APPROVED VIA (route)

G: HOLD POSITION

G: STAND BY

24. ICAO



COMMUNICATION IN AVIATION

The International Civil Aviation Organization (ICAO) introduced English Language Proficiency Requirements (LPR) for all member states in 2003, after accident investigations showed that English language deficiencies caused several serious aviation accidents. ICAO ruled that pilots and air traffic controllers who work in international airspace must be able to speak and understand English for radio communications. When possible, pilots and controllers must use standard radio phraseology. However, they need to be proficient in plain English as well as standard phraseology does not apply to every possible situation that may occur.

COMMUNICATION ERRORS

There are three types of communication errors. The first type is a readback and hearback error, when the pilot reads back ATC's instructions or clearance incorrectly without being corrected. This is the case when, for example, the pilot reads back a descent clearance down to 10,000 feet instead of 5,000 feet as instructed, and the error is not detected by the controller. The second type of error is when a pilot fails to read back ATC's instructions or clearances and instead, uses terms such as "Roger", "Wilco" or "Copied". In this situation it is impossible to verify if the ATC's instructions were understood and will be followed correctly. The third type of error occurs when the controller does not notice when he or she makes an error in the instructions or clearances transmitted to the pilot. These errors can be worsened when pilots or controllers do not have a sufficient knowledge in Aviation English.

"ICAO standardized phraseology shall be used in all situations for which it has been specified. Only when standardized phraseology cannot serve an intended transmission, plain language shall be used".

ICAO document 9835

STANDARDIZED PHRASEOLOGY

The major principle of good communication on the radio is to use standardized phraseology. The ICAO phraseology is a kind of specialized language, a technical and formalized code created for air traffic controllers and pilots to make communications safer. The purpose of phraseologies is to reduce misunderstandings and increase efficiency of communications. To make call signs or spell something on the radio, pilots and air traffic controllers use the ICAO phonetic alphabet. The phonetic alphabet is made up of clear code words representing each letter.

Some pairs of letters, such as “p” and “b”, sound similar, so the phonetic alphabet helps to avoid confusion and mishearing. Numbers are pronounced slightly different over the radio, for example the number 3 is pronounced “tree” and 9 is pronounced “niner”. Some examples of frequent words used in aviation phraseology are “affirmative” for yes, and “negative” for no. “Say again” is understood as a request for clarification, saying something in different words rather than repetition of the statement.

Instead of confirming that a message was received by saying “roger”, the pilot should read back the instructions given by the controller. This way one can avoid communication errors where instructions, especially numbers, were misheard or incorrect. Lack of readback can result in incidents and accidents.

The messages containing the following information should always be read back:

- ATC clearances and instructions to enter, land on, take-off from, hold short of, or cross any runway
- Altimeter settings
- Special Service Requests
- Altitude, heading or speed instructions

Aviation phraseology also contains special calls to address emergencies onboard by using the phrase MAYDAY or PAN-PAN. MAYDAY is reserved for life-threatening situations such as loss of aircraft control or fire onboard. PAN-PAN is used in situations that require urgent assistance from someone on the ground but without life being in immediate jeopardy.

Standardized ICAO phraseology is sometimes referred to as a kind of jargon, a specialized code specific to air traffic controllers and flight crews; yet, as a formalized code, ICAO phraseology does not serve the same function as informal jargon. Rather, phraseology has the specific technical function of ensuring efficient and safe communications.

ICAO document 9835

ENGLISH IN AVIATION

In circumstances where phraseology cannot be used, the plain language should be clear, precise, and direct. Informal jargon, slang, and anything that is not necessary or can cause confusion should be avoided in radio communications. Messages transmitted over the radio should be specific and clearly state the meanings of instructions and intentions, especially if they are meant to clarify something.

Utterances should explicitly state the function of the communication, especially when attempting to clarify or alleviate a concern in the mind of the speaker.

ICAO document 9835

Using clear plain language is especially important, as English is not the first language of many people working within the aviation field. Nevertheless, improving radio communication is everyone's responsibility. To create a safe radio communication, English native speakers should learn about the problems and issues foreign language speakers are facing and implement strategies to help in mutual understanding. They can speak slower and keep their intonation natural and calm. It might be difficult to do so, especially in busy control areas, but it helps non-native English speakers to overcome language anxiety.

Native English speakers should train themselves to avoid using slang and expressions unknown to non-native English speakers. Native English speakers should avoid the dangers of expectancy and ask for readback and confirmation that their messages have been understood properly. In radio communication, pilots and controllers expect to hear certain things in a particular order and these expectations can affect their understanding of messages. As an example, a pilot might mistake a clearance to maintain a heading of 280 degree as a clearance to climb or descend to flight level 280. Expectancy is a human factor closely related to complacency, a feeling of self-satisfaction which can cause a loss of awareness to potential danger. This often occurs when someone is performing a routine activity. To avoid complacency and expectancy a person should always anticipate finding an error in communication.

Accents can be hard to control. Both English native speakers and non-native speakers should make sure that their accents are intelligible. Intelligibility is the ability to understand spoken words. If a pilot is not intelligible on the radio when communicating with air traffic controllers, the result could be catastrophic. The intelligibility of an accent can be improved by moderating the speed of the speech, limiting the amount of information per message, and providing clear breaks between words and phrases. There is no such thing as a native accent in Aviation English as speakers come from different parts of the world and have different cultural and language backgrounds. Using native speakers as role models for accents and pronunciation is misleading as there are many English accents among native English speakers. Adult language learners do not obtain native-like pronunciation. Therefore, Aviation English students should aim for mutual intelligibility and understanding in their pronunciation.

STRESS FACTOR IN USING FOREIGN LANGUAGE

There are a number of factors that make radio communication particularly challenging for pilots and air traffic controllers who are non-native English speakers. Using a foreign language can be a stressful experience for many people. Additionally, on the radio, there are no visual clues, such as body language or facial expressions, which makes understanding more difficult. Flying an airplane can be considered a stressful activity and stress affects language performance. Flying an airplane while communicating across linguistic barriers on a radio without visual clues can negatively affect communication.

Implementation of ICAO phraseology and language proficiency requirements cannot eliminate all sources of miscommunication in aviation. While communication errors will never be completely

eliminated, the goal is to teach pilots and controllers how to recognize these errors and work around them. Regular use of ICAO phraseology, following ICAO language proficiency requirements, awareness of potential pitfalls of language and understanding the difficulties faced by non-native English speakers can help in reducing miscommunication.

VOCABULARY

member state – a country that belongs to a political, economic, or trade organization such as the ICAO

investigation – a process of researching the facts about a crime or an accident to learn what happened

deficiency – a lack of or shortage

phraseology – a way of organizing words and phrases

read back – when the pilot repeats a received message back to the air traffic controller to obtain confirmation of correct understanding

transmitted – sent out radio signal from one person to another

code – a system of signals used to represent letters or numbers in transmitted messages

misunderstanding – a failure to understand something correctly

call sign – letters and numbers used in a unique order to identify an aircraft, person or station

incident – an unexpected event that does not result in serious losses or injuries

accident – an unexpected event that causes damage or injury

to hold short – to stop the vehicle before passing a taxiway or entering a runway

altimeter – an instrument used to measure the altitude of an object above sea level

jeopardy – danger, threat

plain language – grammatically correct language that includes complete sentence structure and accurate but simple word usage

precise – specific, to the point

jargon – specialized language of a professional group that is not understood by outsiders

slang – language that is too informal to use in certain situations

intonation – the rise and fall of the tone of voice when speaking

anxiety – a feeling of fear and uneasiness, often in reaction to stress

human factor – a link between natural human behaviors and characteristics, and the potential risks that they pose on workplace safety, for example fatigue and complacency

complacency – feeling so satisfied with your abilities or situation that you feel you do not need to try harder

intelligibility – the ability of speaking a language and being understood

background – personal history; it refers to such things as someone's social and racial origins, financial status, type of work and education and the family that someone comes from

role model – someone that others look to as a good example

misleading – giving the wrong idea or impression

UNDERSTANDING

Check your understanding of the text by answering if the following sentences are TRUE (T) or FALSE (F).

- a) Improving the safety of radio communications in aviation is the responsibility of both non-native English speakers and English native speakers.
- b) After hearing “say again” on the radio one should repeat the message using the exact same words.
- c) Adult learners of foreign languages can easily learn native-like accents.
- d) Pilots and air traffic controllers do not need to have a knowledge of plain English as they only use ICAO phraseology at work.
- e) Thanks to the implementations of ICAO phraseology and language proficiency requirements, all miscommunications in aviation can be eliminated.

2. Tablica izgovora ICAO-ove abecede i 2. ICAO Spelling Table and Transmission of Numbers

2.1 Tablica izgovora ICAO-ove abecede 2.1 ICAO Spelling Table

Slovo Letter	Riječ Code Word	Izgovor Pronunciation	Hrvatski Croatian
A	Alpha	[ˈalfə]	AL FA
B	Bravo	[ˈbravou]	BRA VO
C	Charlie	[ˈtʃa:li]	ČAR LI
D	Delta	[ˈdeltə]	DEL TA
E	Echo	[ˈekou]	EK O
F	Foxtrot	[ˈfɒkstrot]	FOKS TROT
G	Golf	[ˈgɒlf]	GOLF
H	Hotel	[houˈtel]	HO TEL
I	India	[ˈindia]	IN DIJA
J	Juliett	[ˈdʒu:liət]	DŽU LI JET
K	Kilo	[ˈkilou]	KI LO
L	Lima	[ˈlimə]	LI MA
M	Mike	[ˈmaik]	MAJK
N	November	[nouˈvembə]	NO VEM BE
O	Oscar	[ˈɒskə]	OS KA
P	Papa	[ˈpapa:]	PA PA
Q	Quebec	[kwiˈbek]	KVI BEK
R	Romeo	[ˈroumiou]	RO MIO
S	Sierra	[ˈsi:erə]	SIJE RA
T	Tango	[ˈtæŋɡou]	TEN GO
U	Uniform	[ˈju:nifo:m]	JUNI FOM
V	Victor	[ˈviktə]	VIK TOR
W	Whiskey	[ˈwiski]	VIS KI
X	X-ray	[ˈeksrei]	EKS REJ
Y	Yankee	[ˈjæŋki]	JEN KI
Z	Zulu	[ˈzulu]	ZULU

2.2. Predaja brojki u radiotelefoniji 2.2 Transmission of numbers

Hrvatski Croatian	Brojke i oznake Numbers and Marks	Engleski English
NU LA	0	ZE RO
JE DAN	1	WUN
DVA	2	TOO
TRI	3	TREE
ČE TIRI	4	FOW-er
PET	5	FIFE
ŠEST	6	SIX
SE DAM	7	SEV-en
O SAM	8	AIT
DE VET	9	NIN-er
DE SET - DEVEDESET DEVET	10 - 99	WUN-ZE-RO - NIN-er NIN-er
STO	100	HUN-DRED
TI SU ČA/E	1000	TOU-SAND
ZA REZ	,	DAY-SEE-MAL
TOČKA	.	POINT

25. Introduction to air communications

STARTER

Use arrows (↔) to link the people who talk to each other.

PILOT G-SC27



PILOT FLIGHT 71



CABIN CREW FLIGHT 71



TOWER CONTROLLER



CO-PILOT FLIGHT 71



PASSENGERS FLIGHT 71

AUDIO



1

COMPREHENSION

Air communications are vital for the safety of air travel. Listen to the two exchanges and answer the questions.

- 1
 - a Which stand is 363 on?
 - b Where does the controller think 363 is?
 - c Which numbers and letters are incorrectly pronounced?
- 2
 - a Which flight level is X7420 climbing to?
 - b What is the altitude of X7420?
 - c What two words does the controller confuse?

Look at the six language areas on page 2. Listen again to the two exchanges and look at the transcripts on page 84. Find an example of a difficulty with each language area.

Discuss these questions with a partner.

- 1 Have you had any similar experiences?
- 2 What communication problems have you had when talking to foreign pilots or controllers?

PRONUNCIATION

AUDIO



3

2 Listen and repeat.**ICAO ALPHABET AND NUMBERS**

A Alpha	K Kilo	U Uniform
B Bravo	L Lima	V Victor
C Charlie	M Mike	W Whiskey
D Delta	N November	X X-ray
E Echo	O Oscar	Y Yankee
F Foxtrot	P Papa	Z Zulu
G Golf	Q Quebec	
H Hotel	R Romeo	
I India	S Sierra	
J Juliett	T Tango	
0 <u>zero</u>	4 <u>four</u>	8 <u>ait</u>
1 <u>wun</u>	5 <u>fife</u>	9 <u>niner</u>
2 <u>too</u>	6 <u>six</u>	
3 <u>tree</u>	7 <u>seven</u>	

oo (hundred) hundred
 ooo (thousand) tousand
 . (decimal) dayseemal

British CAA

FL 100 = flight level
 one hundred

ICAO/Global

FL 100 = flight level one
 zero zero

AUDIO



4

3 Listen to the sample message and repeat.

*London Control, Express 164. Flight Level 100.
 Heading 345. ETA Belfast 0839.*

INTERACTIONS

Work with a partner to pass and record messages. If you are not sure about the message, ask for clarification. Repeat *Say again* until you have understood.

ASKING FOR REPETITION**Repeat entire message**

Say again.

Repeat specific item

Say again flight level.
 Say again all before heading.
 Say again all after flight level.
 Say again flight level to ETA.

PARTNER FILES

Partner A File 1, p. 70
 Partner B File 8, p. 72

AUDIO



5

Listen and check. Then compare what you wrote with the information your partner read.

STRUCTURE

QUESTIONS AND SHORT ANSWERS

Are you on stand C63 or C61?	I'm/We're on stand C61.
Is the radio on the correct frequency?	Yes, it is./No, it isn't.
Have you set the QNH?	Yes./Yes, I have./No, I haven't.
Has the weather improved?	Yes, it has./No, it hasn't.
Do you have the flight plan?	Yes, I've got it here./No, I don't.
Do you know where John is?	Yes, I do./No, I don't.
Did the bird strike cause any damage?	Yes, it did./No, it didn't.

4 Put the words in the right order to make questions. Then answer them.

- 1 you a a controller pilot Are or ?
- 2 speak other languages you Do any ?
- 3 abroad ever you been Have ?
- 4 plane travel last When by you did ?
- 5 your provide training company courses English Does ?
- 6 English in minutes the ten your last improved Has ?

American English
airplane

British English
aeroplane

FLUENCY

5 Match the two parts of the sentences to make six reasons why international communications may be difficult.

- | | |
|--------------------------------------|---------------------------------|
| 1 ATCOs and pilots may speak | a English words are used. |
| 2 There may be very poor reception | b in their own language. |
| 3 Extra and unnecessary | c or no standard phraseology. |
| 4 ATCOs or pilots may sometimes | d on the radio. |
| 5 Non-routine situations have little | e use plain English. |
| 6 ATCOs or pilots may not understand | f standard English phraseology. |





6 Listen to five exchanges. Write the number of the exchange next to the description below. Then tick how often you expect to hear each of these in your work. Then discuss your answers with a partner.

	always	often	usually	some- times	occasionally	rarely	never
a ____ standard phraseology	☐	☐	☐	☐	☐	☐	☐
b ____ non-standard phraseology	☐	☐	☐	☐	☐	☐	☐
c <u>1</u> unnecessary English words	☐	☐	☐	☐	☐	☐	☐
d ____ plain English	☐	☐	☐	☐	☐	☐	☐
e ____ local language	☐	☐	☐	☐	☐	☐	☐



7 Listen to the exchange as a long haul flight approaches its destination. Answer the questions.

- 1 What is the main communication problem?
- 2 How did the pilot try to help the controller understand?
- 3 How did the controller deal with the situation?



VOCABULARY

8 Listen again. From each pair of words, tick the word you hear.

- | | | | |
|-----------|-----------|--------------|---------|
| 1 violent | vibration | 5 aggressive | angry |
| 2 rude | unruly | 6 ground | around |
| 3 hit | hate | 7 services | service |
| 4 drink | drunk | 8 remain | remove |

9 What is the problem on board the aircraft? Use words you have selected in exercise 8 to make sentences.

- 1 The passenger was _____, _____, and _____.
- 2 The passenger _____ a crew member.
- 3 The pilot wanted to get on the _____ as soon as possible.

Have you ever had a difficult communication? What did you do?

Yes, I have. I had a medical emergency. The pilot asked for ...

The controller asked me to ...

No, I haven't.

10 Use words from exercise 6 to complete the article.

SAFETY SENSE

Dealing with non-routine events

Occasionally ¹ a pilot may be able to use _____ ² phraseology for a non-routine event, but he will _____ ³ have to use _____ ⁴ English. In this event he had to use _____ ⁵ phraseology but tried to assist the controller by not using any _____ ⁶ English words and by using several different words with a similar meaning.



The radio transmission was good, but the controller could not understand the problem as he _____ ⁷ dealt with domestic flights and _____ ⁸ spoke to a foreign pilot. This can _____ ⁹ be a problem for controllers as they get little practice with spoken English and _____ ¹⁰ speak to local pilots in the _____ ¹¹ language. A non-English speaker will _____ ¹² be alone in this situation and help will _____ ¹³ be available.

Answer the questions.

- 1 How often do you use English for your job?
- 2 How often do you speak English to:
 - a non-native speakers?
 - b native English speakers?
- 3 How often do you listen to the radio or watch TV in English?
- 4 What is your best English skill: listening, speaking, reading, or writing? Which would you most like to improve?
- 5 Have you ever had difficulty trying to speak English? What was the outcome?

UNIT 1 EXERCISE 1



Exchange 1

2

Ground Er ... 363, start up and push at 05.
Pilot 363 Tower, er 363, just started pushing back now. You do know there's another plane pushing back from the next stand?
Ground Say again 363.
Pilot 363 There's another pushing back on the next stand. We've had to stop.
Ground Er, 363, stand number give me.
Pilot 363 Er, say again.
Ground Number give me. Your number, please?
Pilot 363 Er – we're 363.
Ground No, I ask you stand number.
Pilot 363 Oh, you want our stand number. Yeah – we're on Charlie 61. 363.
Ground 363, you not C63?
Pilot 363 Negative. We're definitely on Charlie 61. 363.
Ground Ah! Sorry, sir. Stand Charlie 61.

Exchange 2

ATC X7420, confirm heading 040.
Pilot X7420 Roger, heading 040.
ATC X7420, turn right, heading 340.
Pilot X7420 Did you hear that? He did say right, didn't he? Er – can you confirm that, please? X7420.
ATC X7 – er – X – er 420. Right turn heading 3 – er – 40. Climb – er – flight level 1 – er – 00.
Pilot X7420 That's what I thought. Does this guy know right from left? I'm sure that should be left – I'm going to check again.
Er – Control – please confirm right onto heading 340. X7420.
ATC X7420, turn – er – right – er – heading 340.
Pilot X7420 Roger, OK. We're at 3800. If that's what he wants, that's what we'll do.
ATC X7420, turn left, left. I say again – turn left!

UNIT 1, EXERCISE 3



Communication 1

5

Gatwick Approach, Speedbird 209. Flight level 110. Heading 100. ETA Isle of Man 1005.

Communication 2

Shanwick Control, BD744A requesting Oceanic clearance. Estimating 58 West, 10 North at 1310 UTC. Requesting flight level 350, Mach .80.

Communication 3

Speedbird 567A is cleared 16 000 on 1010 hectopascals. Expect to cross GOOSE – Golf Oscar Oscar Sierra Echo – level at 120, speed 250 knots.

Communication 4

London Control, United Air 955. Flight level 90. Heading 230. ETA Saint Abbs Head 1005.

Communication 5

Roger Prestwick, 317A is cleared 58 North, 10 West, 60 North, 20 West, 60 North, 30 West, 60 North, 40 West, 58 North, 50 West, PORGY – Papa Oscar Romeo Golf Yankee. Maintain 350 Mach .80.

Communication 6

UK Air 298A Heavy. Taxi to hold R for runway 31. QNH 1016. FALCON 4F departure. FALCON – Foxtrot Alpha Lima Charlie Oscar November. Squawk 7412.

UNIT 1, EXERCISE 6



Exchange 1

6

Er – yeah. Good morning there, Quality 405. A departing 747 reported wind shear at 800 feet. Airspeed loss 25 knots, strong right shift. Let me know if you have a problem, please. And – have a nice flight! Bye.

Exchange 2

BAW 456 Speedbird 456 request descent.
Approach Speedbird 456 maintain flight level 260 expect descent after HERON.
BAW 456 Maintaining flight level 260. Speedbird 456.

Exchange 3

038-NT Bellevue Tour, 038-NT, nous avons les installations en vue. Pourrait-on envisager une approche à vue main droite pour la 31 droite?
Tower 038-NT, vous me confirmez le terrain en vue?
N97962 Er – Bellevue Tower. Stinson N97962. Request vectors to base-leg 31 right.
Tower Stinson N97962. Yeah – go ahead ...
038-NT Affirm NT, nous avons les installations en vue.
Tower Alors autorisé approche à vue main droite 31 droite, NT.
N97962 Er – Bellevue Tower Stinson N97962, I say again. Request vectors to base-leg 31 right.

Exchange 4

A48BX BX ready for take-off. Request left turn out heading 300 degrees.

Departure BX, left turn cleared. After departure climb not above altitude 2000 feet until reaching zone boundary.

A48BX Left turn approved. Climbing to 2000 feet until reaching zone boundary. BX.

Exchange 5

Er – hi, there N526. You’ve got a south westerly blowing in there. Around about 10 knots. You’re OK to land. Runway 28.

UNIT 1, EXERCISE 7

 *Blaze 606* 7 Tukubu Tower, Blaze 606. We have a problem and we’d like a priority landing. We have a violent passenger on board.

Tower 1 Say again 606. I don’t understand.

Blaze 606 We have an unruly passenger on board. We have a violent passenger. He has hit a member of the cabin crew. Request priority landing.

Tower 1 606, I’m sorry, sir. I do not understand your problem, sir.

Blaze 606 This passenger is endangering the safety of the flight. He is drunk.

Tower 1 The safety of the flight is in danger?

Blaze 606 Affirm. We have an aggressive passenger. We need to get on the ground as soon as possible.

Tower 2 606, understand you have a problem with a passenger, sir? Do you need medical assistance?

Blaze 606 Negative. We have a medical doctor on board and do not need medical assistance. We need services to remove this unruly passenger from the plane.

Tower 2 606, the police and the airport authorities will meet you, sir.

26. Radio equipment

HOME
ABOUT US
SERVICES
CONTACT

Audio Switch Panel GA 100

One button switches between **headphones** and the cabin **speaker**. The panel includes two **transceivers** (Com 1, Com 2). The pilot and copilot can tune into different **frequencies**. **Squelch control** can be manual or automatic. A single knob adjusts **break squelch**.

The panel connects **PTT handheld mikes** and/or headphones. Press the PTT switch to **key** any selected device.

Transponders
We supply mode A, C, and S **transponders**. [CLICK HERE FOR DETAILS](#)

Headphones and Microphones
Our headphones reduce white noise and increase comfort. We provide both handheld mikes and **boom mikes**. [CLICK HERE FOR DETAILS](#)




handheld mike
speaker
audio switch panel
headphones
transponder
boom mike

Vocabulary

3 Match the words or phrases (1-7) with the definitions (A-G).

- | | |
|----------------------|--------------------|
| 1 __ boom mike | 5 __ break squelch |
| 2 __ transponder | 6 __ handheld mike |
| 3 __ transceiver | 7 __ headphones |
| 4 __ squelch control | |

- A a pair of small speakers worn close to a person's ears
 B a setting that controls the level of background noise
 C a device that communicates an aircraft's location using radio-frequency signals
 D a microphone that one holds by hand
 E a radio device that includes both a transmitter and a receiver
 F a microphone attached to a pole that one does not have to hold
 G a set threshold at which noise becomes audible

4 Fill in the blanks with the words or phrases from the word bank.

word BANK

audio switch panel speaker
PTT frequency radio key

- Pilots communicate with air traffic controllers using a specific _____.
- Before you _____ your mike, make sure you know what to say.
- A cabin _____ is much louder than a headphone.
- Flying safely would be impossible without _____ communication.
- A modern _____ displays frequencies and channels digitally.
- A(n) _____ mike requires pilots to press a button before speaking.

Get ready!

1 Before you read the passage, talk about these questions.

- What are some types of equipment that pilots use to communicate?
- What is one important feature on an audio switch panel?

Reading

2 Read the product listing. Then, mark the following statements as true (T) or false (F).

- __ The audio switch panel connects headphones and transponders.
- __ Break squelch on the GA 100 cannot be adjusted manually.
- __ The company sells multiple types of mike.

- 5 Listen and read the product listing again. Why do pilots use headphones for besides listening to air traffic controllers?

Listening

- 6 Listen to a conversation between a sales representative and a customer. Choose the correct answers.

- Why is the man calling Grays Aviation?
 - to ask how to use a product
 - to ask how to install a product
 - to ask about product capabilities
 - to ask about product prices
- What does the woman recommend?
 - repairing the audio switch
 - installing a larger speaker
 - purchasing a certain headphone model
 - speaking to an audio equipment specialist

- 7 Listen again and complete the conversation.

Sales representative: Good morning, Grays Aviation.

Customer: Hi. I'm 1 _____ your Audio Switch Panel GA 100.

Sales representative: Great. What can I tell you about it?

Customer: Is its squelch control 2 _____ ?

Sales representative: Actually, 3 _____. It's automatic. But you can adjust it manually too.

Customer: Oh, okay. 4 _____. And do you sell noise-canceling headphones?

Sales representative: We do. 5 _____ the 800 model. They reduce a lot of noise. And they're very comfortable.

Customer: Sounds good. I guess I'll 6 _____ .

Speaking

- 8 With a partner, act out the roles below based on Task 7. Then, switch roles.

USE LANGUAGE SUCH AS:

I'm calling about ...

Do you sell ...?

I recommend ...

Student A: You are a radio equipment sales representative. Talk to Student B about:

- radio equipment capabilities
- different products you sell
- your recommendation

Student B: You are a customer. Talk to Student A about product details and what products to buy.

Writing

- 9 Use the conversation from Task 8 to complete the order form.

Aviation Radio Equipment

Product Order Form

Product name: _____

Number of items: _____

Product features: _____

Did you get help from an employee?
Y / N

Was he or she helpful? Please explain.

27. Radio basics 1

Aviation Phonetic Alphabet

Letter	Word	Spoken
A	Alfa	<u>Al</u> fah
B	Bravo	<u>Brah</u> voh
C	Charlie	<u>Char</u> lee
D	Delta	<u>Dell</u> tah
E	Echo	<u>Eck</u> oh
F	Foxtrot	<u>Foks</u> trot
G	Golf	Golf
H	Hotel	Ho <u>tell</u>
I	India	<u>In</u> dee ah
J	Juliett	<u>Jew</u> lee ett
K	Kilo	<u>Key</u> loh
L	Lima	<u>Lee</u> mah
M	Mike	Mike
N	November	No <u>ven</u> ber
O	Oscar	<u>Oss</u> cah
P	Papa	Pah <u>pah</u>
Q	Quebec	Keh <u>beck</u>
R	Romeo	<u>Row</u> me oh
S	Sierra	See <u>air</u> rah
T	Tango	<u>Tang</u> go
U	Uniform	<u>You</u> nee form
V	Victor	<u>Vik</u> tah
W	Whiskey	<u>Wiss</u> key
X	Xray	<u>Ecks</u> ray
Y	Yankee	<u>Yang</u> key
Z	Zulu	<u>Zoo</u> loo

Foxtrot
Whiskey
Charlie

Good Communicators Make Safe Aviators

Follow these ICAO guidelines when communicating by radio:

- Always use established **ICAO** prowords such as "**roger**" and "**wilco**" for consistency of communication.
- Don't say "yes" and "no" in radio communications. "**Affirmative**" and "**negative**" are much clearer. Also, "can't" sounds very similar to "can." Use "**unable**" instead to avoid confusion.
- Remember to spell **callsigns** using the **aviation phonetic alphabet**. Similar-sounding letters like "B" and "D" are easily confused. Use "Bravo" and "Delta" instead.
- Quick communication is especially important in emergencies. Use "**pan**" for urgent situations and reserve "**mayday**" for true emergencies. This saves time and prevents false alarms.

Get ready!

- 1 Before you read the passage, talk about these questions.

- 1 How is talking on an airplane's radio different from usual communication?
- 2 How would a pilot say O W using the phonetic alphabet?

Reading

- 2 Read the poster on radio communication. Then, mark the following statements as true (T) or false (F).

- 1 ___ The guidelines recommend that pilots use "yes" instead of "affirmative" because it is shorter.
- 2 ___ The poster encourages aviators to create new prowords.
- 3 ___ Using the proper words for emergencies prevents false alarms.

Vocabulary

- 3 Match the terms (1-6) with the definitions (A-F).

- | | |
|----------------|-------------------|
| 1 ___ pan | 4 ___ unable |
| 2 ___ wilco | 5 ___ negative |
| 3 ___ callsign | 6 ___ affirmative |

- A a proword meaning "no"
- B a code that identifies an aircraft
- C a proword indicating urgency
- D a proword meaning the speaker will comply
- E a proword meaning "yes"
- F not having the ability to comply with instructions

4 Read the sentence pairs. Choose which word or phrase best fits each blank.

1 mayday / roger

- A The pilot said "_____ " to indicate that he received the message.
 B Prepare to send help when you hear the call "_____ ".

2 ICAO / phonetic alphabet

- A The _____ creates guidelines for communicating by radio.
 B New pilots must learn to use the _____ when speaking.

5 Listen and read the poster on radio communication again. What is a danger of poor radio communication?

Listening

6 Listen to a conversation between a pilot and an air traffic controller. Check (✓) the instructions that the woman gives the man.

- 1 ☐ say again 4 ☐ stand by
 2 ☐ go ahead 5 ☐ clear runway
 3 ☐ request permission

7 Listen again and complete the conversation.

Pilot: Norwick Tower, Freedom Air 812.
Controller: This is Norwick Tower. 1 _____.
Pilot: I say again, Norwick Tower, Freedom Air 812.
Controller: Freedom Air 812. 2 _____.
Pilot: Norwick Tower, Freedom Air 812. 3 _____ landing clearance.
Controller: Freedom Air 812. Unable. Stand by for AirTech 579 to 4 _____.
Pilot: Norwick Tower. Roger. 5 _____.
Controller: Freedom Air 812. AirTech 579 needs more time. Do you have fuel to hold?
Pilot: 6 _____.

Speaking

8 With a partner, act out the roles below based on Task 7. Then, switch roles.

USE LANGUAGE SUCH AS:

Say again ...
 Stand by for ...
 Roger. Standing by ...

Student A: You are a pilot. Talk to Student B about:

- your identification
- a request
- receiving instructions

Student B: You are an air traffic controller. Talk to Student A about his or her request.

Writing

9 Use the conversation from Task 8 to complete the air traffic controller's radio log.

Norwick radio log

Contacted by: _____

Aircraft's request: _____

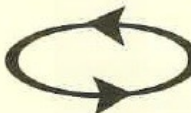
Request: Approved / Denied

Instructions given: _____

28. Radio basics 2: Conventions



transmit 

 **hold**

As a pilot, you must maintain consistent communication with air traffic control. Remember these conventions when you **transmit** messages:

ALWAYS ...

- **identify** yourself by your callsign.
- **stand by** until you receive instructions. For example, always **hold** your position until you are **cleared** to proceed.
- repeat a transmission exactly when you hear "read back".

NEVER ...

- use **plain English** when you can use a callsign or proword instead.
- say "**degrees**". Describe your heading with numbers only. For example, say "two three zero" instead of "two hundred thirty degrees."
- **step on** another transmission. Wait until other speakers are finished.
- risk miscommunication. Use "**say again**" if you are not sure of a transmission.

Get ready!

1 Before you read the passage, talk about these questions.

- 1 What must a pilot always do when communicating by radio?
- 2 How do pilots send and receive radio messages?

Reading

2 Read the training manual on radio communication. Then, complete the table.

Instead of ...	Pilots should ...
using plain English	1 _____
saying degrees	2 _____
stepping on transmissions	3 _____

Vocabulary

3 Match the words or phrases (1-5) with the definitions (A-E).

1 ___ degree	4 ___ identify
2 ___ step on	5 ___ read back
3 ___ stand by	

A to announce one's name or callsign
 B to repeat information exactly
 C to wait for further information
 D to interrupt someone
 E a unit that measures direction

- 4 Fill in the blanks with the words or phrases from the word bank.

word BANK

hold say again transmit
cleared to plain English

- The message was unclear, so the pilot asked the controller to _____.
- Remember to use prowords instead of _____.
- Air Global 592, you are _____ land.
- Use your callsign whenever you _____ a radio communication.
- ProJet 62, _____ your position until the runway is clear.

- 5 Listen and read the training manual on radio communication again. How should a pilot express his or her heading?

Listening

- 6 Listen to a conversation between a pilot and an air traffic controller. Mark the following statements as true (T) or false (F).

- ___ Another pilot stepped on the woman's transmission.
- ___ The man is unable to provide a traffic advisory.
- ___ The woman is cleared for landing.

- 7 Listen again and complete the conversation.

Pilot: Rockford Tower, JetFlyer 56.

Controller: JetFlyer 56, Rockford Tower. Stand by, 1 _____ another transmission.

Pilot: 2 _____, JetFlyer 56.

Controller: JetFlyer 56. 3 _____.

Pilot: Rockford Tower, JetFlyer 56. Requesting 4 _____.

Controller: JetFlyer 56. No traffic on runway 17. You are 5 _____.

Pilot: Rockford Tower, JetFlyer 56. 6 _____.

Controller: JetFlyer 56, Rockford Tower. Cleared to land on runway 17.

Speaking

- 8 With a partner, act out the roles below based on Task 7. Then, switch roles.

USE LANGUAGE SUCH AS:

Stand by, you stepped on ...

Request ... advisory ...

Cleared to ...

Student A: You are a pilot. Talk to Student B about:

- a radio transmission
- an advisory request
- current conditions

Student B: You are an air traffic controller. Talk to Student A about an advisory request.

Writing

- 9 Use the conversation from Task 8 to complete the pilot's flight status log.



Pilot's Flight Status Log

Aircraft: _____

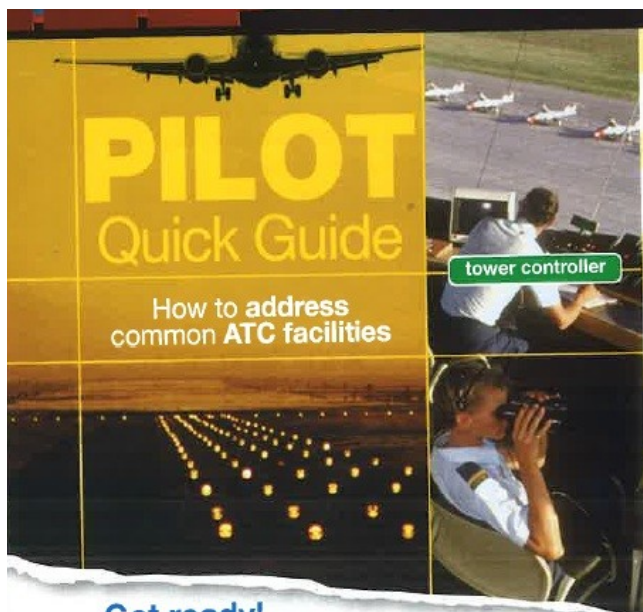
Flight status at 0700 hours _____

Requested _____

advisory from _____

Received advisory that _____

29. Radio basics 3



When addressing a **tower controller**, use *Tower*.

Example: "Greenfield Tower, SkyBus 124 preparing for takeoff."

When addressing **Ground** control, use *Ground*.

Example: "Greenfield Ground, SkyBus 124 taxiing to runway 7."

When addressing an **approach facility** or a **departure facility**, use *Approach* or *Departure*.

Example: "Delton Approach, SkyBus 124 approaching at 1,800 feet."

When addressing a **Flight Service Station**, use *Radio*.

Example: "Harborville Radio, SkyBus 124, 30 miles east. Requesting weather advisory."

When addressing **Center** control, use *Center*.

Example: "Delton Center, SkyBus 124 requesting traffic advisory."

Address **UNICOM** and **MULTICOM** as such.

Get ready!

- 1 Before you read the passage, talk about these questions.

- 1 Who works in an air traffic control tower?
- 2 Which air traffic control station controls the airplane during mid-flight?

Reading

- 2 Read the quick guide. Then, choose the correct answers.

- 1 What is the purpose of the manual?
 - A to correct common mistakes
 - B to define the different ATC facilities
 - C to provide communication instructions
 - D to compare different types of pilots
- 2 Which of the following is a correct way for a pilot to address a controller?
 - A SkyBus 112, Greenfield Ground.
 - B Greenfield Ground, SkyBus 112.
 - C Pilot Rogers, Greenfield Ground.
 - D Ground Approach, SkyBus 112.
- 3 Which of the following is NOT explained in the manual?
 - A how to address a Flight Service Station
 - B how to address UNICOM
 - C how to address a tower controller
 - D how to address another pilot

Vocabulary

- 3 Match the words or phrases (1-8) with the definitions (A-H).

- | | |
|-----------------------|-----------------------------|
| 1 __ tower controller | 5 __ UNICOM |
| 2 __ MULTICOM | 6 __ approach facility |
| 3 __ ATC facility | 7 __ departure facility |
| 4 __ Center | 8 __ Flight Service Station |

- A a location from which air traffic controllers give pilots instructions and clearance
- B a communication frequency used by pilots to communicate their flight intentions when no air traffic control facility or base operator is available
- C an air traffic communications system that provides air traffic advisories at airports that do not have air traffic control
- D a facility that provides pilots with air traffic information before, during, and after flights
- E a location that controls air traffic leaving from an airport
- F a location that controls air traffic arriving at an airport
- G a person who manages traffic in and around an airport from the airport's tower
- H a part of air traffic control that manages traffic en route between departure and arrival

- 4 Read the sentence pairs. Choose which word or phrase best fits each blank.

1 ATC facility / Flight Service Station

- A Pilots receive instructions from a(n) _____.
- B Pilots receive traffic information from a(n) _____.

2 Ground / Center

- A _____ controls planes in mid-flight.
- B _____ controls planes that are taxiing at an airport.

- 5 Listen and read the quick guide again. How should a pilot address a Flight Service Station?

Listening

- 6 Listen to a pilot contacting air traffic control by radio. Mark the following statements as true (T) or false (F).

- 1 ___ The woman contacts Approach first.
- 2 ___ The man instructs the woman to contact Greenfield Ground.
- 3 ___ The woman requests landing clearance.

- 7 Listen again and complete the conversation.

Pilot: Greenfield 1 _____, SkyBus 112 approaching from Delton.

Controller 1: SkyBus 112, Greenfield Approach. What is your distance and estimated 2 _____?

Pilot: Distance, 27 miles 3 _____. Time of arrival estimated at 1:17 p.m.

Controller 1: SkyBus 112, contact Greenfield 4 _____ on 117.22.

Pilot: 5 _____. SkyBus 112 contacting Greenfield Tower. Greenfield Approach, SkyBus 112 approaching at 1,600 feet.

Controller 2: SkyBus 112, Greenfield Tower, roger. Please 6 _____ estimated arrival time.

Pilot: Greenfield Tower, SkyBus 112 estimated arrival time at 1:17. Requesting clearance to land.

Speaking

- 8 With a partner, act out the roles below based on Task 7. Then, switch roles.

USE LANGUAGE SUCH AS:

Requesting ...
What is your ... ?
Contact ...

Student A: You are a pilot. Talk to Student B about:

- your distance
- your time of arrival
- what you are requesting

Student B: You are an air traffic controller. Talk to Student A about contacting other ATC facilities.

Writing

- 9 Use the conversation from Task 8 to complete the flight arrival report.



Thornfield Airport

Flight Arrival Report

Airline and flight number: _____

Approaching from: _____

Expected arrival time: _____

First ATC facility contacted: _____

Pilot directed to contact: _____

30. Aviation today

Currently, aviation is recovering from the shutdown caused by COVID-19. In the past few months authorities have relaxed travel rules around the world, airlines have restored cancelled flights, and manufacturers have started to deliver new aircraft. Many air travelers are taking to the sky and they are booking flights to go on overdue vacations and business trips.

The industry recovery is happening at a very fast pace and many issues are presenting themselves. Airports are lacking employees who did not come back after the pandemic. The labour shortage at the airports is causing chaos, flights are being delayed and canceled, the luggage is missing, and there are huge lines at the service desks. Earlier this week, a picture of a pilot helping ramp agents to unload an aircraft went viral on the internet. Engine producers are warning airlines that they will have to delay their aircraft deliveries because they are not receiving parts on time. Not all of it is the result of the fast recovery from COVID-19. Ongoing political conflicts are adding to problems with the supply chain and are creating shortages in raw materials.

A large problem for the aviation industry is the labour shortage. Companies that laid off their staff in 2020, to save money, are now finding that many of these former employees are not coming back. Airports, airlines, and other companies related to aviation are trying to hire new staff rapidly, but training baggage handlers, machine operators, crew schedulers, as well as design engineers takes both time and money.

The pilot shortage in the US is presently getting a lot of attention. American airlines were getting ready to recruit more pilots back in 2020, but then the pandemic hit, the whole industry shut down and the demand for pilots temporarily disappeared. Now that things are returning to normal, with people starting to travel again, the pilot shortage is returning. Most people are blaming this situation on Federal Aviation Administration (FAA) regulations such as the required minimum of 1,500 flight hours to be able to work at an airline and the retirement age of 65 for pilots. In the second half of the 20th century the American military forces were producing a lot of pilots and many of them were ending up in civil aviation. In the 1980s most airlines were recruiting pilots from the military and only 25% of pilots at that time were coming from civil aviation flight training programs.

Nowadays, the military is no longer a major source of pilots for airlines and is also facing a pilot deficit. Flight training in the United States is very expensive and can cost between \$80,000 and \$170,000. These amounts are making a career in aviation impossible for many people. To resolve that issue, some airlines are starting their own flight schools with cadet pilot programs for their future employees. Future pilots will have to sign a training bond and stay with a company for a certain amount of time in exchange for the cost of the training program.

Even with technological innovations and automation, well trained employees are a crucial part of aviation, and the industry needs to find ways to attract young people to pursue careers in this field.

VOCABULARY

shutdown – a stop of a business' activity for a period of time or forever

staff – a group of people who work for an organization

to restore – to bring back into existence or use

to hire – to engage the services of a person or company for wages or other payments

overdue – not done when expected or when needed

to recruit – to look for workers for a company

recovery – a return to a normal state

demand – how much of something is needed

fast pace – happening very quickly

labour shortage – a situation when employers are having a difficult time finding qualified applicants to fill job openings

retirement age – an age at which someone finishes their working life

deficit – an amount by which something is less than what is required or expected

to go viral – something that quickly becomes very popular by being published on the internet

cadet pilot program – a type of pilot training program offered by a training organization, together with an airline, which results in an employment

to warn – to make someone conscious of a possible problem or danger

training bond – a contract between a pilot and an employer specifying that the pilot will have their training paid for, if he or she stays with the company for a period of time

supply chain – a network of individuals and companies who are involved in creating a product and delivering it to their consumers

raw materials – basic material that is used to produce goods

in exchange – in return for something

to pursue – to try to do something or achieve something, usually over a long period of time

to lay off – to end workers' jobs without fault of employees, often initiated by the employer for economic reasons to cut costs

UNDERSTANDING

Check your understanding of the text by answering if the following sentences are TRUE (T) or FALSE (F).

- a) Many employees did not come back to work at airports after the pandemic ended.
- b) COVID-19 is the only reason for issues with the supply chain and shortages of raw materials.
- c) Hiring new employees is a quick and easy process.
- d) Modern aviation is highly automated, and it does not need well trained staff anymore.
- e) According to the FAA regulations airline pilots have to retire by the age of 65.

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