



Discover the Parts of an Airplane

EDUCATOR OVERVIEW

OVERVIEW:

In this lesson, students discover the parts of an airplane by learning about the major components of an aircraft and the important jobs each part performs. Through discussion and a guided worksheet activity, students explore how parts such as the wings, fuselage, engines, tail, and landing gear work together to make flight possible.

By labeling an airplane diagram and matching parts with their functions, students develop a basic understanding of aircraft design and how science and engineering support aviation. The lesson encourages curiosity about technology, problem-solving, and the engineering that allows airplanes to travel through the skies.

Standards:

Next Generation Science Standards (NGSS)

Science and Engineering Practices

- Asking questions and defining problems
- Developing graphics
- Obtaining, evaluating, and communicating information

Crosscutting Concepts

- Structure and function
- Systems and system models
- Cause and effect

Disciplinary Core Ideas

- **PS2.A: Forces and Motion** – Understanding how forces such as lift, thrust, drag, and gravity affect motion and flight.
- **ETS1.A: Defining and Delimiting Engineering Problems** – Understanding how engineers design airplanes with specific parts that perform important functions.
- **ETS1.B: Developing Possible Solutions** – Exploring how different airplane parts work together as a system to allow aircraft to take off, fly, and land safely.

Suggested Grade Level: 4th- 8th

Suggested Time: 1-1.5 hours



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Lesson Introduction

ASK STUDENTS:

Have you ever looked closely at an airplane and wondered what all the different parts do?

TELL STUDENTS:

- Airplanes may look simple when they fly high in the sky, but they are actually made of many important parts. Each part has a special job that helps the airplane fly safely. Just like a car has wheels, an engine, and a steering wheel, an airplane has parts that help it move, stay balanced in the air, and land safely.
- Today we are going to explore the parts of an airplane and learn what each part does. We'll discover how engineers design these parts so airplanes can take off, fly through the sky, and land safely. By the end of the lesson, you'll be able to identify the main parts of an airplane and explain how they work together to make flight possible.



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- **Wings – The Lift Makers**

Tell Students: Wings create lift so the airplane can fly. Airplane wings are specially shaped to help an airplane rise into the air. As the airplane moves forward, air flows over and under the wings creating lift, the force that pushes the airplane upward. The wings are like the airplane’s “magic arms.” When air rushes over them fast enough, they lift the airplane into the sky.

Fun fact: Did you know that many airplane wings are inspired by the shape of bird wings!

- **Engine – The Power Source**

Tell Students: The engine provides power to move the airplane. Airplane engines give the aircraft the power it needs to move forward. Some airplanes use spinning propellers, while others use powerful jet engines. As the engine pushes air backward, the airplane moves forward. This forward motion creates thrust, which helps the airplane gain speed so the wings can create lift. The engine is like the airplane’s muscles, giving it the strength to race down the runway and into the sky.

Fun fact: Some jet engines are so powerful they can move airplanes that weigh hundreds of thousands of pounds!

- **Fuselage – The Airplane’s Body**

Tell Students: The fuselage is the main body that holds passengers and cargo. The fuselage is the long center section of the airplane. It connects the wings, tail, and landing gear together. Inside the fuselage are the passenger seats, cargo areas, and cockpit where the pilots control the airplane. Engineers design the fuselage to be strong and lightweight so it can safely carry people and cargo while still allowing the airplane to fly efficiently. So, the fuselage is like the airplane’s body, holding everything together and protecting the people inside.

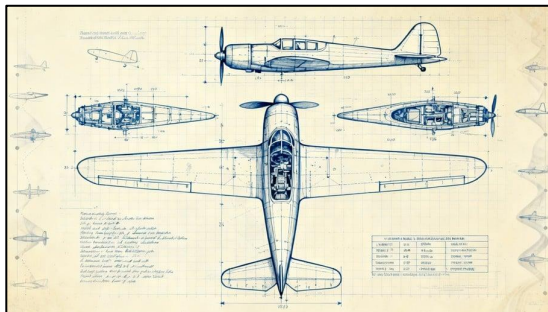
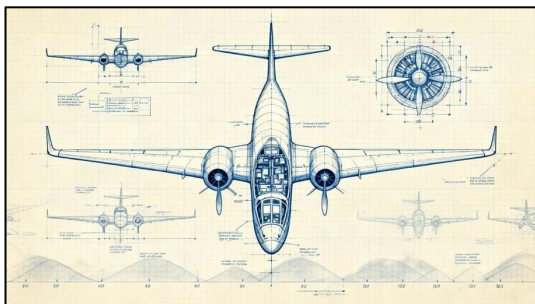
Fun fact:

Some large airplanes can carry more than 400 passengers inside their fuselage!



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- **Tail – The Airplane’s Steering System**

Tell Students: The tail helps control direction and stability. The tail helps keep the airplane balanced and flying straight. It includes parts called stabilizers that help the airplane move up, down, and side to side while flying. These parts allow the pilot to control the airplane and keep it steady during turns or when flying through wind. So, the tail works like the rudder of a boat, helping the airplane steer and stay balanced in the air

Fun fact: Without a tail to stabilize it, an airplane would be very difficult to control!

- **Landing Gear – The Airplane’s Wheels**

Tell Students: Landing gear helps the airplane take off and land. Landing gear includes the wheels and strong supports that allow an airplane to roll on the ground. They help the airplane speed up during takeoff and land safely at the end of a flight. On many airplanes, the landing gear folds up into the airplane after takeoff to reduce drag while flying. So, landing gear is like the airplane’s shoes or wheels, helping it move safely on the runway.

Fun fact: Airplane tires are designed to handle very heavy weights and high speeds when the plane lands!

- **Cockpit – The Pilot’s Control Center**

Tell Students: The cockpit is located at the front of the airplane and is where the pilots sit to fly the aircraft. Inside the cockpit are many instruments, screens, and controls that help the pilots guide the airplane through the sky. These instruments show important information such as speed, altitude, direction, and weather conditions. Pilots use controls like the yoke or control stick, pedals, and throttle to steer the airplane, adjust its speed, and keep it flying safely. So, The cockpit is like the airplane’s control center, where the pilots steer, navigate, and make sure everything is working properly during the flight.

Fun fact: Modern airplane cockpits use advanced digital screens and computers to help pilots safely fly across the world!

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Name: _____

Date: _____

Test Your Knowledge!

In this activity packet, you will learn about the parts of an airplane and how they help an airplane fly.

- 1. Read and Learn:** Read about the different parts of an airplane and what each part does.
- 2. Label the Airplane:** Use the word bank to label the correct parts on the airplane.
- 3. Match the Parts:** Draw a line to match each airplane part with its job.
- 4. Test Your Knowledge:** Answer the questions to see what you learned.
- 5. Think Like an Engineer:** Use what you learned to answer the final question or draw your own airplane.

Wow! Now you will be able to name the main parts of an airplane and explain how they help it fly!





Read and Learn Worksheet

Name: _____

The Airplane That Wanted to Fly



One sunny morning at the airport, a small airplane named Skyler sat on the runway. Skyler wanted to fly high in the sky, but first all the airplane parts needed to work together.

“Let’s get ready for takeoff!” said the engine.

The engine is like the airplane’s muscles. It gives the airplane power and pushes it forward so it can move down the runway.

“Don’t forget about us!” said the wings.

The wings are very important because they create lift, which helps the airplane rise up into the air. Without wings, airplanes could never leave the ground!

Me too, said the fuselage.

The fuselage is the long body of the airplane. It holds the passengers, pilots, and cargo safely during the flight.

At the front of the airplane is the cockpit.

This is where the pilot sits and controls the airplane using buttons, screens, and steering controls.

At the back of the airplane is the tail.

The tail helps the airplane stay balanced and fly in the right direction. It works like the rudder on a boat.

Finally, the landing gear waited patiently below.

“These wheels help the airplane take off and land safely,” they said.

When every part was ready, the engine roared, the wings lifted Skyler into the air, and the airplane soared through the sky.

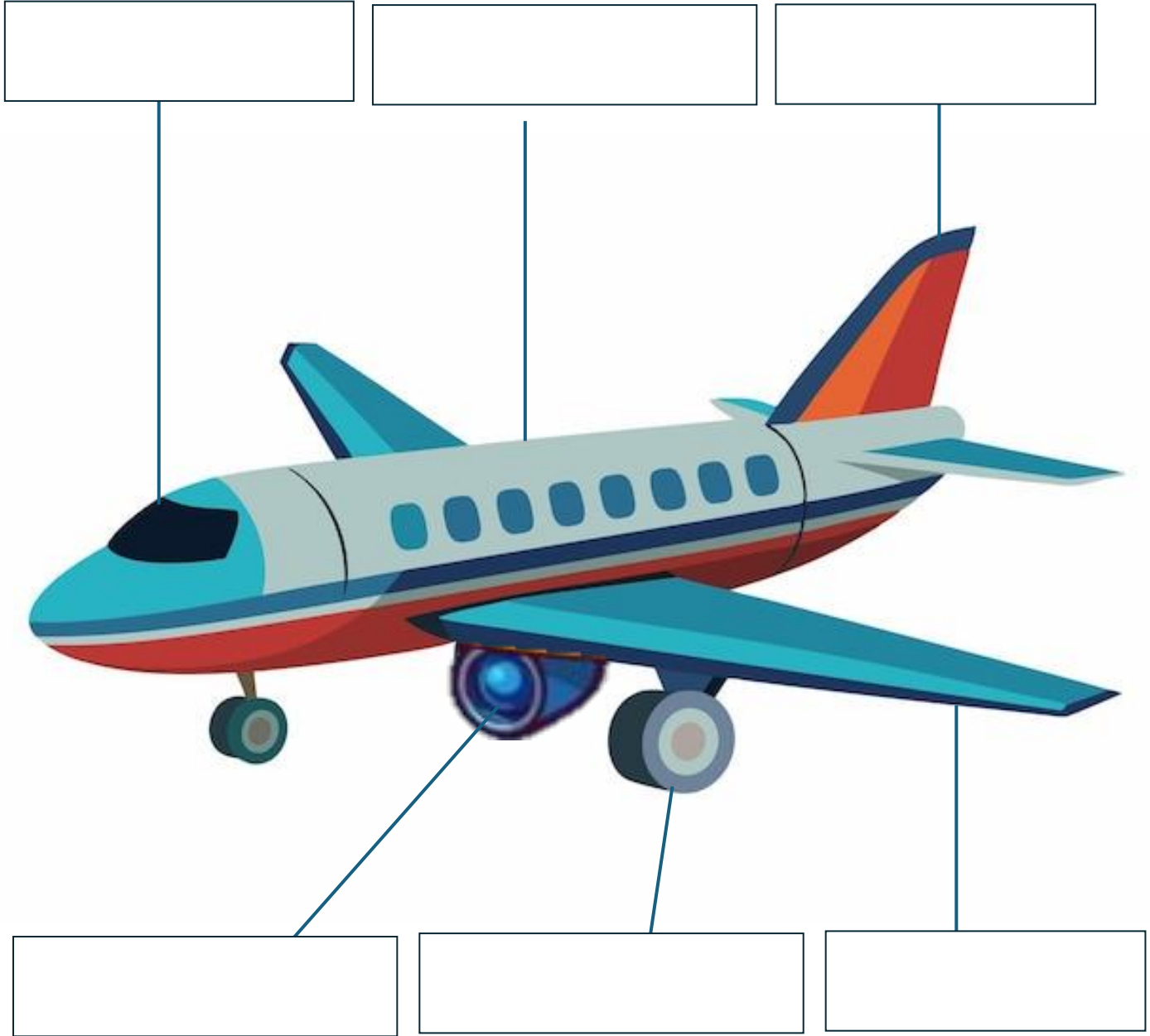
Skyler smiled (well, as much as an airplane can).

Flying is possible because every airplane part has an important job!



Label the Airplane Parts Worksheet

Name: _____



Word Bank:

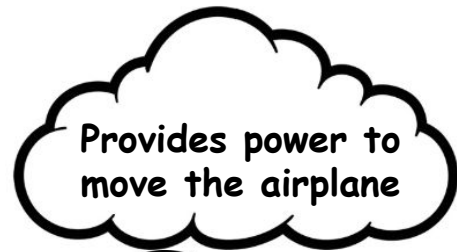
Wings Engine Fuselage Tail Landing Gear Cockpit



Match the Part to Its Job Worksheet

Name: _____

Draw a line to match each airplane part with what it does.





Test Your Airplane Knowledge Worksheet

Name: _____

Circle the correct answer.

- Which part of the airplane helps lift it into the sky? Wings Engine Landing Gear
- Which part holds passengers and cargo? Fuselage Tail Cockpit
- Which part gives the airplane power to move forward? Engine Wings Tail
- Which part helps the airplane stay balanced and turn? Tail Engine Landing Gear
- Where do the pilots sit when flying the airplane? Cockpit Wing Landing Gear

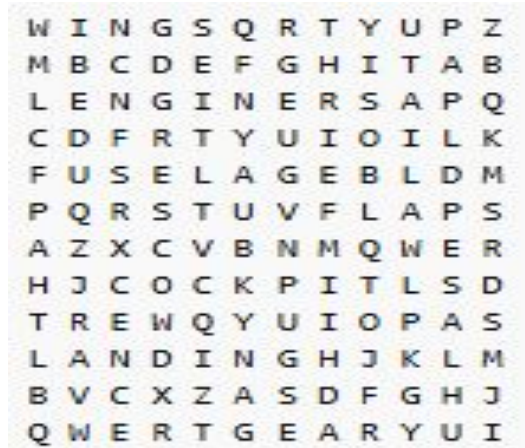
Circle True or False

- The wings help create lift so the airplane can fly. True
False
- The landing gear helps the airplane fly through the air. True
False
- The cockpit is where the pilot controls the airplane. True
False
- The engine helps power the airplane forward. True
False

Find the airplane parts in the puzzle.



WINGS ENGINE FUSELAGE
TAIL COCKPIT LANDING
GEAR FLAPS





Think Like and Engineer Worksheet

Name:

- 1. Think like an engineer:** Engineers design airplanes so that many parts work together to help the airplane fly safely.

Question: Why do you think airplanes need many different parts working together?

- 2. Design Your Own Airplane:** Draw your own airplane below and label the parts you learned about today!