📘 **FOR PARENTS/CARERS**

✈️ Flight Systems: How Planes Work

A single lesson, cross-curriculum Curiosity Pack for Year 7

📌 At a Glance

Topic: Aircraft Systems & Flight

Age Level: Year 7

Session Length: 45–60 minutes

Pathfinders will:

- investigate aircraft systems
- explore how aircraft parts work together
- examine how systems support flight and control
- identify the functions of major aircraft parts
- create an Aircraft Systems Project

🌎 Lesson Overview

This Curiosity Pack introduces Pathfinders to the concept of systems and how different parts of an aircraft work together to achieve flight.

Learners investigate the major parts of an aircraft and explore how each part contributes to movement, stability, control, communication, safety, and operation. They examine how aircraft are designed as systems rather than collections of separate parts.

Pathfinders explore examples such as wings, engines, tails, rudders, landing gear, control surfaces, and navigation systems. They investigate how each component performs a specific role and how all parts must work together to allow safe and efficient flight.

The lesson combines science, engineering, technologies, literacy, observation, design, and inquiry learning through investigation, comparison, analysis, and project creation.

This learning experience supports:

- observation and questioning
- scientific understanding
- systems thinking
- comparison and analysis
- critical and creative thinking
- visual communication
- engineering design thinking

The lesson is designed using inclusive learning principles, supporting diverse learning needs through:

- self-paced learning

- visual supports
- flexible activity choices
- hands-on exploration
- multiple ways to show learning

⏱️ Session Length

Total learning time: 45–60 minutes

Pathfinders may:

✓ complete the lesson in one session

✓ pause and return later

✓ spend longer on favourite activities

✓ simplify or extend the task

🎯 Learning Focus

This Curiosity Pack explores:

- aircraft systems
- parts of a plane
- flight control and stability
- engineering design
- systems thinking
- scientific observation
- technology and innovation

Learners will:

✓ investigate aircraft systems

✓ identify major aircraft parts and their functions

✓ explain how systems work together to support flight

✓ compare different aircraft features

✓ organise ideas visually

✓ communicate discoveries through drawing, writing, discussion, or design

✓ create an Aircraft Systems Project

⭐ Success Looks Like

Success may look different for each Pathfinder.

Examples may include:

✓ identifying aircraft parts

✓ explaining the function of a system

✓ recording observations about aircraft

✓ creating a labelled diagram

✓ comparing different aircraft features

✓ designing an aircraft systems project

✓ sharing discoveries in a way that works for them

Exploring, noticing, investigating, and creating are all part of success.

🧰 Materials

You may want:

- paper or workbook
- pencils and coloured pencils
- ruler
- books or websites about aircraft
- aircraft photographs
- aircraft diagrams
- sticky notes or index cards
- scissors
- glue

Optional:

- tablet or computer
- printer
- poster paper
- modelling materials
- digital design tools

🔗 Suggested Learning Resources

✈️ **NASA – Parts of an Airplane**
https://www.nasa.gov

Clear diagrams showing major aircraft parts and functions.

🚀 **Smithsonian National Air and Space Museum**
https://airandspace.si.edu

Information about aircraft design, aviation history, and flight technology.

🌍 **National Geographic Kids – Transportation**
https://kids.nationalgeographic.com

Articles, images, and videos about aircraft and aviation.

🔒 **Online Safety Reminder**

When exploring online, remember:

👩‍🏫 Ask an adult first

🌐 Use trusted learning websites

🔒 Keep personal information private

⚠️ Tell an adult if something feels wrong

Stay curious and stay safe.

🎥 **SciShow Kids – Flight and Engineering Videos**
https://www.youtube.com/@SciShowKids

Short educational videos exploring flight and engineering concepts.

🧠 Universal Design for Learning Supports

This Curiosity Pack supports different ways of learning by providing flexible choices for engagement, learning, and expression.

Multiple ways to engage

Learners can:

- choose which aircraft to investigate
- focus on one system or several systems
- take movement or sensory breaks
- work independently or with support
- compare different aircraft designs
- connect ideas to transport or technology interests

Multiple ways to learn

Learners can:

- read facts
- watch short videos
- explore photographs
- examine diagrams
- compare different aircraft
- discuss discoveries

Multiple ways to show learning

Learners can:

- draw and label
- write notes
- create a poster
- build a model
- explain ideas verbally
- create digitally
- make comparison charts

📘 FOR LEARNERS

✈️ Flight Systems: How Planes Work

🧭 Pathfinder Guide

Welcome Pathfinder!

Pathfinders explore how systems work by investigating how different parts work together to achieve a purpose.

Aircraft are complex machines made up of many connected systems. Each system performs a specific job, but no system works completely on its own. Wings, engines, control surfaces, navigation equipment, and landing gear all work together to help aircraft move safely through the air.

Engineers study how systems interact so they can design aircraft that are safe, efficient, and reliable.

Looking closely at aircraft systems can help Pathfinders understand how science, engineering, and technology work together to solve problems.

During this Pathfinder Journey, Pathfinders may:

✈️ explore aircraft systems

⚙️ investigate aircraft parts

🧠 examine how systems work together

🔎 compare different aircraft designs

🎨 create an Aircraft Systems Project

Ideas may be shown in many ways:

🖍️ drawing

📝 writing notes

📊 creating charts

🎨 designing

💻 creating digitally

🗣️ explaining ideas aloud

Activities may be completed in order or Pathfinders may begin with the part that feels most interesting.

Taking breaks, noticing patterns, asking questions, and making discoveries are all part of the Pathfinder Journey.

🔎 Pathfinder Investigation

Pathfinders sometimes notice that aircraft are made up of many connected systems.

Each system has a specific role. Some systems help the aircraft move. Some help it stay balanced. Some help pilots control direction. Some help keep passengers and crew safe.

Engineers design aircraft so that these systems work together.

Examples of aircraft systems include:

✈️ wings → create lift

🚀 engines → provide thrust

🛞 landing gear → support take-off and landing

🧭 navigation systems → help determine location and direction

🎛️ control surfaces → help steer and stabilise the aircraft

🪁 tail systems → support balance and control

📡 communication systems → support contact with air traffic control

Each system contributes to safe and controlled flight.

👀 Some Pathfinders investigate by:

- looking at aircraft photographs
- examining labelled diagrams
- reading aircraft facts
- watching videos
- comparing different aircraft
- discussing aircraft systems

🔍 Pathfinders may investigate:

- What system is this?
- What does it do?
- How does it help the aircraft?
- What other systems does it work with?
- What might happen if it did not work properly?
- Why is this system important?

🖍️ When Pathfinders investigate, they sometimes keep track of what they discover.

Ideas may be recorded by:

- drawing aircraft
- labelling systems
- writing notes
- creating system cards
- making comparison charts
- recording interesting discoveries

📊 Some Pathfinders may compare:

- passenger aircraft and cargo aircraft
- large aircraft and small aircraft
- aircraft with different wing designs
- different navigation or control systems

Looking closely at similarities and differences can help Pathfinders understand how engineers design systems for different purposes.

🎨 Wonder Studio

Pathfinders now bring their discoveries together.

Engineers often use diagrams, models, plans, and visual explanations to communicate how systems work.

In this activity, Pathfinders may create something that shows what they discovered about aircraft systems.

Some Pathfinders choose to focus on:

✈️ one aircraft type

⚙️ one aircraft system

🧭 navigation systems

🚀 engines and propulsion

🛞 landing systems

🪁 control and stability systems

Or another aircraft feature that interests them.

🗓️ Before creating, Pathfinders may think about:

- Which system is most interesting?
- What job does it perform?
- How does it work with other systems?
- Why is it important?
- How can I show my ideas clearly?

You may create:

🎨 a poster

📄 a fact page

⚙️ a labelled system diagram

🧱 a model

💻 a digital design

📊 a comparison chart

📖 a mini booklet

You may include:

✈️ aircraft name

⚙️ systems

🧠 functions

📝 explanations

🎨 drawings

📊 comparisons

🔍 interesting facts

As you create, you may notice new connections between aircraft systems and flight.

There is no single correct way to create.

Different Pathfinders may choose different ways to share their discoveries.

💭 Reflection

How did this Curiosity Pack feel?

😀 Loved it

😳 Interesting

😐 Okay

😟 Challenging

Pathfinders may think about:

- Which aircraft system was most interesting?
- What surprised you about how planes work?
- What did you discover about flight?
- What would you like to learn more about?
- Which activity did you enjoy most?

You may reflect by:

- talking
- drawing
- writing
- building
- recording a short explanation