

AIR ACTIVITIES BADGE

Stage 1

How to earn your badge...

1. Make an aircraft out of paper and see how well it flies
 2. Identify four different types of aircraft
 3. Describe any aircraft (including fictional) you'd like to fly in and explain why. Present your idea in a creative way, such as artwork, presentations, digital designs or model.
 4. Talk to someone who has flown in an aircraft. What was it like? If you've already flown in an aircraft, tell someone else about it.
 5. Learn about the different jobs an aircraft can do. For example, transporting people, carrying goods, or helping in emergencies.
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Stage 2

How to earn your badge...

1. Make an aircraft out of recycled material, then try to make it fly. Explore how different shapes and materials change how it flies
 2. Learn the different parts of an aeroplane.
 3. Understand the four key forces that make a plane fly: lift, thrust, drag and weight
 4. Know the dangers of an airfield
 5. **Complete any three of the following:**
 - a) Find out about one kind of aircraft and tell someone else about it.
 - b) Go plane spotting and identify different aircraft at an airfield, airport or using a tracking app or video.
 - c) Meet someone who regularly flies an aircraft, such as a pilot, and talk to them about their experiences.
 - d) Learn how different weather conditions can affect air activities.
You could test how a paper plane flies on a calm day and on windy day.
 - e) Use a standard map to locate key aviation landmarks, such as airports or airfields.
 - f) Use the phonetic alphabet to spell out flight-related terms and phrases
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Stage 3

How to earn your badge:

1. Describe how a wing generates lift and the conditions that can cause an aircraft to stall.
2. Name the main control surfaces of an aeroplane and how they work.
3. **Flight Time Calculation Test**
Find out how long it'd take to fly 60 nautical miles at an airspeed of 90 knots in each of these conditions:
 - a. No wind
 - b. Headwind of 15 knots
 - c. Tailwind of 30 knot

Use the formula: $\text{Time} = \text{Distance (Nautical miles)} \div \text{Speed (airspeed} \pm \text{wind speed)}$

4. Complete any four of the following:

- a. Draw a diagram or make a model of an airfield and name the key features. Explain the rules for accessing an airfield.
- b. Find out about unmanned aircraft, such as drones. Understand why they might be used and discover the rules around flying them safely.
- c. Try out a flight simulator. This could be done online, on an app, on a computer game or as an immersive experience.
- d. Look at an online weather forecast and understand how different conditions (such as wind speed, visibility and cloud cover) impact flying. How do standard weather forecasts differ from METAR reports?
- e. Know the role of an airfield marshal.
- f. Explore a place of aviation interest, such as an airfield, air display, aviation museum or through a virtual tour.
- g. Send and receive a message using the phonetic alphabet, then explain why it's used to communicate in aviation.

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Stage 4

How to earn your badge...

1. Trim a paper aeroplane or model glider to glide, stall and turn, then find out how an aircraft's trimming, weight and balance can affect its flight.
2. Draw a runway and the circuit pattern that planes follow, then explain how air traffic control uses this circuit to keep planes safe and communicate with pilots.
3. Learn how the wind's speed and direction are measured, then find out why they're important during take-off and landing.
4. Complete any four of the following:
 - a. Try an air-based activity and share what you learned.
This could be something from our air activities list, travelling on a plane or an activity you've agreed with your group volunteer.
 - b. Find out about the roles and responsibilities of flight crew members, such as pilots, co-pilots, engineers or cabin crew.
 - c. Simulate a take-off and landing using a flight simulator.
This could be done online, on an app, on a computer game or as an immersive experience.
 - d. Explain why pilot's (and other flight crew) use a pre-flight checklist.
Describe the main items that are checked.
 - e. Explore the different types of emergency radio calls used in aviation, such as mayday and pan-pan
 - f. Follow the flight path of an aircraft using maps and satellite images and see how landmarks help pilots find their way.
You could map the route using Google Maps, Ordnance Survey maps, or an aviation chart.
 - g. Learn why Morse code is still used by navigational beacons and recognise six three-letter sequences.

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Stage 5

How to earn your badge...

1. Find out about the different types of air traffic control services used at airfields and airports.

Explain how this would be different at a small local airfield compared to a large international airport.

2. Explain why aircraft have flaps, slots and slats and find out how each of them works.
3. Design and build a model of a part of an aircraft and explain how it helps the plane fly. For example, make a cockpit control panel or a wing with flaps.
4. Complete any four of the following:
 - a. Explore the relationship between aviation and climate change. Find out how flying impacts the environment and what the industry is doing to reduce its carbon footprint.
 - b. Explore a new aviation technology or come up with your own idea for a futuristic invention. Explain how it works and its potential impact
 - c. Learn about the emergency procedures for one specific type of aircraft. Understand what actions to take in emergency events, such as engine failure, cable break or autorotation.
 - d. Find a major flight path that's close to you and explain how it's chosen and why it helps make air travel safe and efficient.
 - e. Take part in an air activity you haven't tried before or show a reasonable level of skill in an air activity you already practise.
 - f. Learn what runway markings mean, then explain how lights and pyrotechnic signals are used for ground-to-aircraft communication.
 - g. Learn about the different types of airspace, such as controlled, uncontrolled and special use.
 - h. Work with a team and take on different roles (such as pilot, co-pilot, air traffic control, air marshal, and ground crew) to simulate safely completing a flight.