



STEM AMBASSADORS

MAKING PAPER PLANES

PREP PACK FOR VOLUNTEERS

Suitability:

This activity would suit volunteers who have limited experience of supporting STEM sessions in schools.

BEGINNER





Objective

The object of this activity is to **illustrate scientific principles linked to flight**.






Information to share with teachers

This session reinforces aspects of the KS2 Science and Design & Technology National Curriculum around:

- ★ Scientific method
- ★ Design and testing
- ★ Measurement
- ★ Evaluation

Design and Technology: Key Stage 2

Promoting links between the school and the RAF (things to say)

-  How the activity can help dispel myths about the RAF and illustrate available opportunities.
-  Broaden horizons about careers and options.
-  Help to enthuse and engage students.
-  Raise teacher awareness of what the RAF do.
-  How this activity can help the school develop closer links with RAF volunteers.



Activities in schools

Preparing to run the activity in a school

Typically teachers work to a lesson plan. Lesson plans detail the basic structure of the session, timings for each section and contingency plans for more and less able pupils. An example lesson plan is included in this pack.

Preparing yourself and agreeing timings, level of involvement for the school, for you and your colleagues

Make sure you get to the school in good time, allowing plenty of time for preparation and setting the room and your materials out. Check with your school link on what materials are provided and what you need to bring. If you require worksheets or photocopying, agree this with your school link well in advance of the session. Allow plenty of time to clear up at the end and make sure you have thought about a contingency plan if anything goes wrong. Identify the year group and level to pitch the activity at.

Most STEM Ambassador activity would typically be with years 5 – 9 (ages 9 – 13) and would cover aspects of the National Curriculum for Key stages 2 and 3.

The school science curriculum, part of the National Curriculum is detailed and schools would not expect you to know about this. However, you might like to take a look at some of its content to familiarise yourself with the areas covered.

National curriculum in England: science programmes of study

Schools run dedicated 'Career Day' events. You may be asked to incorporate a STEM session into these events. Take along career-linked resources where possible to hand out after the activity.



Planning this activity


The object of this activity is to illustrate scientific principles linked to flight.

This activity requires limited planning although it may be worth arranging with schools for a large space (such as a school hall) to be made available for 'testing' the aircraft.

RESOURCES REQUIRED

[Examples of paper planes](#)

- + Large space for testing designs.
- + A4 plain paper (a few sheets per pupil or group).
- + Long tape measure for measuring distance of flight.
- + Prizes (optional) for best design etc.

-  Powerpoint presentation 'Paper planes' that accompanies this Prep Pack.



Assessing risks associated with the activity

The organiser (typically the school or other host organisation) of the activity is responsible for the health and safety of the young people on their site or property. However, because you as the STEM Ambassador also have a duty of care you may be asked by the teacher or organiser to contribute to their risk assessment. Discuss the activity with the organiser (school) and ask them to provide a copy of their risk assessment.

Risk assessment examples

Your school contact should be aware of other risk assessments used for activities in school, which could be adapted for this activity. If they are unsure of the risks involved in running practical STEM activities in school you could direct them to relevant resources produced by experts in the field. [STEM Learning](#) have lots of resources/templates and guidance on this. The link below provides details of actions they can take to manage risk in their school, along with some templates for STEM-related activities.

[A balanced approach to risk](#)

As this STEM Ambassador Prep Pack details your activity and all the resources required, the school may find the pack useful in helping them to construct an appropriate risk assessment.



ID on the day

Visitors to schools may be asked for their current DBS Certificate or the corresponding Certificate Number. Schools may also ask for some form of current photo identification if a DBS Certificate is not produced. Schools will typically issue a visitor ID at reception for each separate visit to the school. Visitor ID if issued, must be worn at all times whilst on site. You should always expect to be working alongside a member of school staff where children are involved. It is not good practice for a visitor to be left alone with a group or individual children. STEM Ambassadors are reminded that the use of student personal data, photographs, videos or other information about students is not permitted and must not be put on social media.

Differentiation for more able and less able pupils:

More able

Use additional paper planes resources for more complex designs/different size/weight of paper.

Less able

Use standard dart design and concentrate on modification – improvement in incremental steps.

Logistics

Schools are secure sites and access may be restricted. Ask your school contact before you visit about getting onto the site, where to park and where to report to. Schools may not provide lunch so it may be advisable to bring your own refreshments and snacks.

Parking at some schools can be difficult. Check with your schools contact about the availability of visitor parking.

Handouts for pupils

 [Examples of paper planes](#)

Additional resources

If you are interested in adapting or enhancing this activity we've identified some additional online resources to help you with this. Click the weblinks below to find out more.

 [Aiming for awesome - aircraft design](#)

 [Design and aircraft carrier - Take off](#)

 [Make a 'boomerang' paper airplane](#)  YouTube

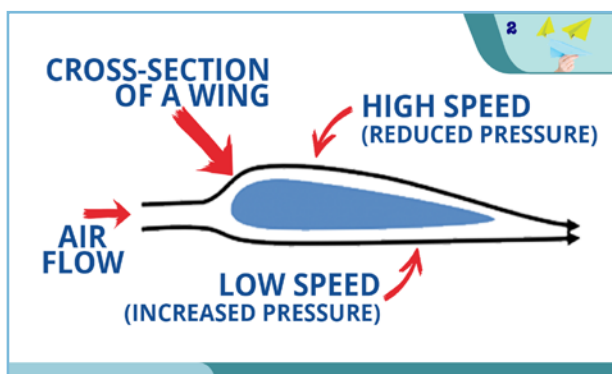
Running the activity: lesson plan

Session length: 50 minutes

🕒 10 minutes



Introduction to basic principles of flight.



As airflows over a wing the speed of the air and the shape of the wing causes lift and thats how an aircraft gets off the ground.



Ask pupils to think about the four principles of flight - can they name any of them?



They are: Lift, Weight (or Gravity), Thrust and Drag. Ask pupils to think about where they might be on the aircraft in the slide above. Can they match them up to the correct place?



In this slide we can see the four areas correctly identified. Ask pupils to say which force would be important if:

We wanted to go faster (Thrust).

We wanted to slow down (Drag).

We wanted to go higher (Lift).

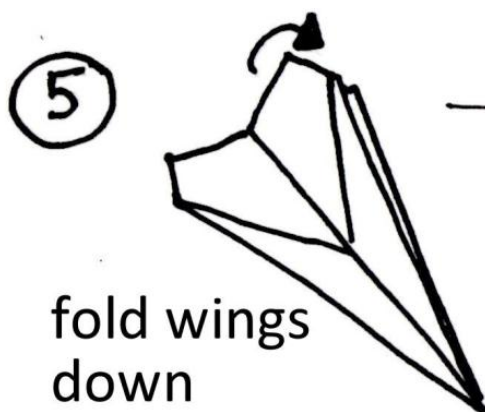
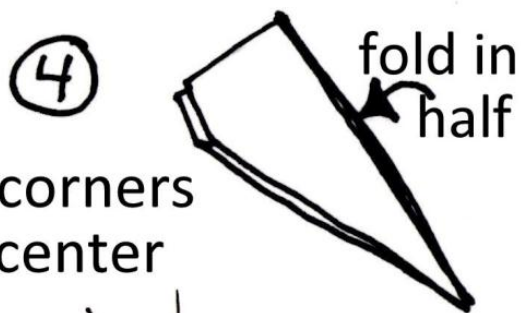
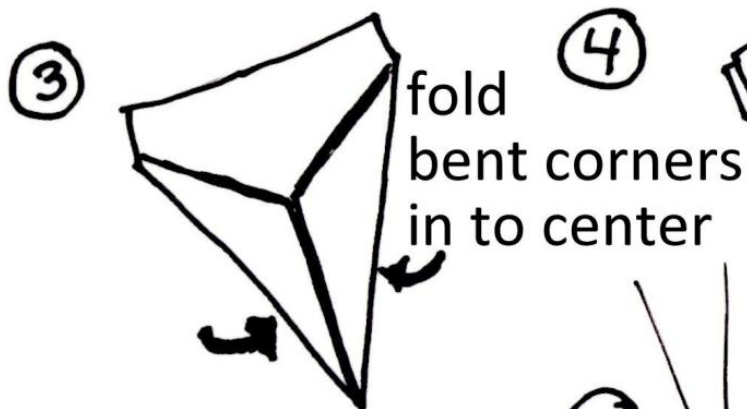
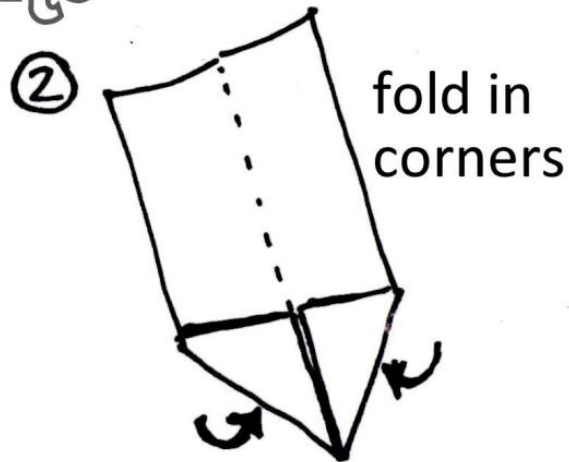
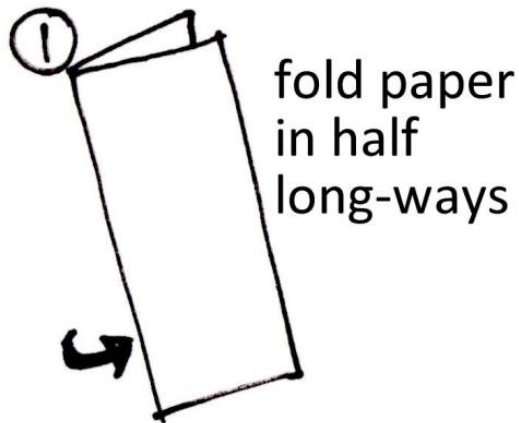
🕒 30 minutes

Pupils work in small groups (pairs) to design and build a model paper aircraft. Each pair should conduct 'test' flights to ensure their aircraft 'flies'. It should then be flown 3 times with flight distance measured and recorded using a tape measure or other measurement indicator (such as number of paces).

10 minutes

Plenary – discussing students' designs and hand out prizes.

Paper Airplane creativewithkids.com



*Fold * Decorate * Fly*

