

This activity has been adapted from Mission X, which is a worldwide educational initiative supported by ESA and the national space agencies of several countries including the UK to encourage healthy and active lifestyles among children.

Activity Mission X: Building a rocket



TIME NEEDED **60** minutes

This activity can be done to introduce the topic of rockets for requirement 7

DID YOU KNOW?

Rockets are used to launch satellites and spacecraft into space. They have powerful engines strong enough to blast the spacecraft into the correct orbit in space. Europe's most important rockets are the Ariane rocket family. Since 1979, five main types of Ariane rockets have been launched from Europe's spaceport in French Guiana. These rockets only take unmanned cargo. Astronauts are launched to the International Space Station in Russia's Soyuz rocket.

How does it work?

If you blow up a balloon and let go before you tie up the end, the air goes in one direction and the balloon goes in the opposite direction. A rocket works in much the same way. Exhaust gases come out of the engine nozzle at high speed, pushing the rocket forward. Rockets need lots of fuel in order to overcome Earth's gravity. Only when they reach a speed of 28 000 km/h are they travelling fast enough to enter orbit.

You will need: (for one rocket)

- outdoor space
- plastic bottles
- stiff cardboard
- water
- glue
- scissors
- rulers
- pens/pencils
- corks with holes (the same number as bottles and the right size for the bottles)
- bicycle pump with needle adaptor



Instructions:

1. Ask your Scouts to decide if their rocket should have fins and a nose, as well as how big and what shape these should be. If they decide to add fins and a nose, they will need to make these out of cardboard and decide how to attach them to the bottle.
2. Once the Scouts have designed their rocket, they will need to decide how much water to fill their rocket with. Once they have filled the rocket with water, ask them to push a cork into the bottle.
3. Ask the Scouts to connect the bicycle pump to the cork and turn their rocket upside down.
4. Ask the Scouts to stand back and carefully pump air into the bottle
5. See how far the rocket goes!
6. What happens if you ask the Scouts to change the design of their rocket? For example, ask them to change the amount of water, the fin and nose shape. Ask them to see if the rocket goes further.

Remember!

- Rockets should only be launched outside – you and the Scouts may get wet!
- Do not stand over the rocket

