



Make a Mars Parachute



Objectives

- To learn that European scientists and engineers are planning to send a new robotic rover that will explore the surface of Mars.
- To learn that to land a rover on Mars they will have to use a parachute.

Resources required

- plastic bag
- 4 pieces of cotton or string
- paper clip
- sellotape
- small toy car
- bubble wrap



Teaching activities

Background

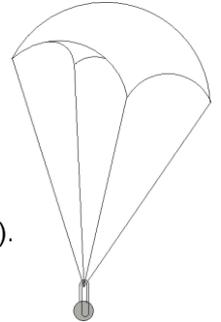
Engineers and Scientists design, build and send robots to explore the surface of Mars to learn about the history of the planet. In particular, scientists want to learn about the history of water on Mars; how much was there and when was it there? It is thought that water is crucial for the development of life. If there was water on Mars in its past it might mean that there was also life.

In the future it we hope to send humans to Mars to look for signs of past water and life. Before this, the European Space Agency (ESA) plans to send a rover to Mars as part of the two-part ExoMars mission. This second stage of the ExoMars mission will launch in 2018. British scientists are busy working on this mission and are providing cameras for the rover and other instruments.

It will take about 9 months for ExoMars to get to Mars. Once there, the Mars rover, safely packed inside the landing module will enter the Martian atmosphere at a speed of 21,000 kph. Obviously it needs to slow down otherwise it would crash into the surface! The lander will use parachutes to bring instruments, like the ESA Mars Rover, slowly down onto the planet's surface.

Parachutes have a large surface area, which creates a large 'drag' force slowing down the speed of the lander as it falls through the planet's atmosphere. Just before touch down, thrusters will ignite and the rover will gently hover down safely to the Martian surface.

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Activity

In this activity pupils make a parachute to land a small toy car (which represents the Mars Rover).

Note: Please take sensible precautions when dealing with heights.

1. Cut a plastic bag into a square with sides of 30cm.
2. Cut four pieces of cotton 40cm long, and attach them to each corner of the plastic square using Sellotape.
3. Bring the free ends of the four pieces of cotton together and tie them to the paper clip.
4. Wrap toy car in a single layer of bubble wrap.
5. Attach toy car to the paper clip.

Pupils could explore:

- What happens to the parachute when dropped from different heights?
- Can you get your Mars Rover to land the right way up?

Web links

For more information about ExoMars see:

- <http://exploration.esa.int/mars/48088-mission-overview/>
- <http://exploration.esa.int/mars/46048-programme-overview/>
- To see how the NASA rover "Curiosity" landed on Mars watch this amazing video:
<http://www.youtube.com/watch?v=P4boyXQuUlw>



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