

For 4 to 5 year olds

Context

ESA's ExoMars mission is sending a lander and rover called Rosalind Franklin to Mars in 2020. The capsule containing the lander and rover will separate from its spacecraft shortly before reaching the Martian atmosphere, and will use two large parachutes, along with other technology to slow its descent to land on the Red Planet. In this activity, the children play a parachute game, watch a video clip animation of ExoMars, make parachutes, and try to land a toy rover on a pretend Martian surface. They may later choose to test parachutes of different sizes, designs and materials.



National curriculum links

Maths - shape, space and measure:

- Talk about size, shape, distance and position

Understanding the world:

- Use imagination and test own ideas

Expressive arts and design:

- Explore similarities and differences of materials
- Use a variety of materials

Resources

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|--------------------------|--------------------------|
| • Activity sheets 1-1b | • Balloons |
| • Class play-parachute | • Sticky tape |
| • Toy parachute for demo | • Scissors |
| • Plastic bags | • String |
| • Paper | • Plasticine |
| • Fabric | • Lego bricks or smaller |

Lesson starter

Start the lesson by asking the children to guess what is in the bag: a big parachute! We are going to play a game. Tell the children to sit in a circle and hold the parachute and move it up and down to trap air underneath. The children can take turns sitting underneath. Can they suggest who would use or need a parachute? Scientists are sending a rover called Rosalind on a long journey to Mars: exploration.esa.int/science-e/www/object/index.cfm?fobjectid=58091

The rover will need a parachute to help it land on Mars. Watch the ESA video clip:

www.youtube.com/watch?v=9NpkbExlNiA

Rosalind will try to land in a safe, flat place avoiding rocks, craters, hills and volcanoes, like these on Activity sheets 1-1b or via mars.nasa.gov/mro/multimedia/images/?ImageID=7731

Show the children the area you have set out as the surface of Mars, with obstacles such as pretend rocks (cones) and craters (hoops). (See support notes.) What might happen if it lands on rocks? Where is a good place to try to land?



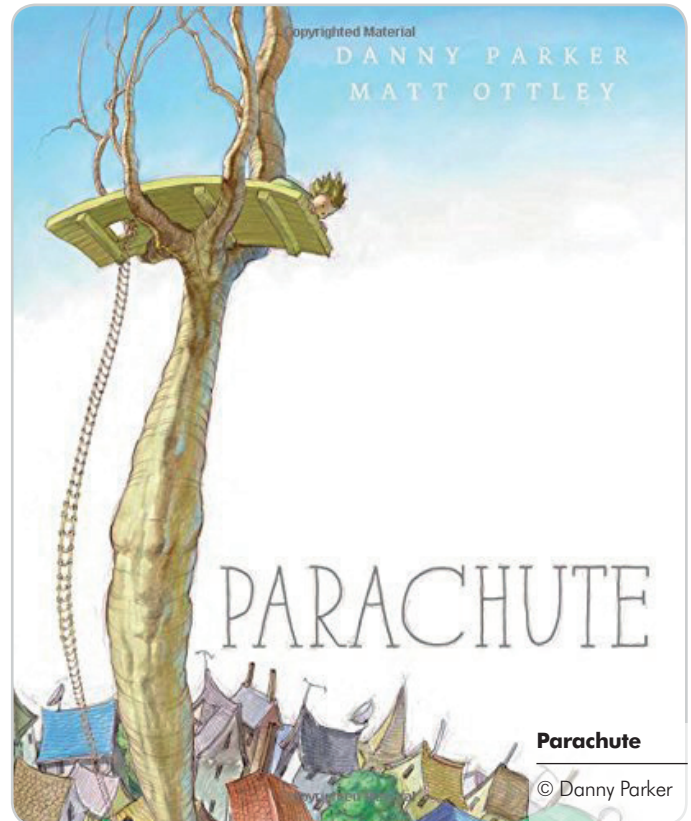
Main activity

We are going to make some parachutes and see whether we can land a little model Rosalind rover on a target on planet Mars.

Show the children the toy parachute and have a volunteer throw it high; watch it drop it to see how it travels. The children use the pieces of plastic and strings to make their own parachutes. They can attach the strings to each corner using sticky tape or, with adult help, by tying them. Try to keep the strings all the same length, approximately the length of a side of the square of plastic. See support notes for examples. These links show how to make a simple parachute:

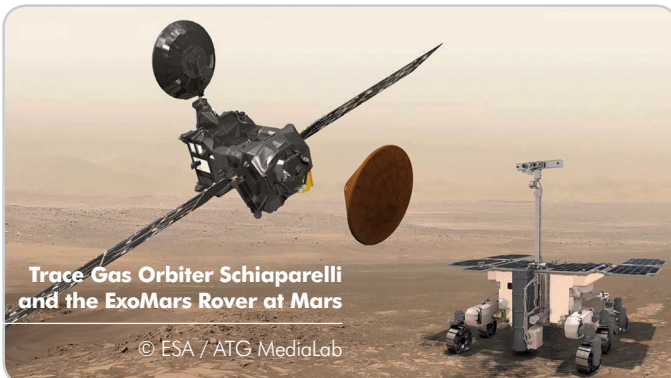
www.youtube.com/watch?v=wjhoX79tXk4 and www.wikihow.com/Make-a-Toy-Parachute

Attach a Lego brick or plasticine as the rover. Throw up the parachute as high as you can and watch it float down. Can you land the rover on Mars? The children describe where their rover lands each time, using language of direction and position. What might happen if we make a bigger parachute or a smaller one? What else can you think of to try?



Parachute

© Danny Parker



Trace Gas Orbiter Schiaparelli and the ExoMars Rover at Mars

© ESA / ATG MediaLab

Further activities

- There are many more opportunities for more parachute fun. Try different sizes, types of materials, toys or strings. Do balloons work?
- What happens if we put a hole in the parachute?
- Draw your own Mars map or make a Mars surface and add a model of Rosalind.
- Toby in the story book is scared of heights. What scares you?

Plenary

The children talk about their parachutes. Which ones worked well? Which travelled fastest, slowest?

The rover Rosalind will have a huge parachute to land on Mars. Why does it need a parachute? What does the parachute do? Explain that the parachute slows the rover as it falls through the air.

End the lesson with the story of Parachute by Danny Parker.

STEM Vocabulary

Parachute	Fall	Fast	Small
Air	Slow	Large	

Images of geographical features on Mars
mars.nasa.gov/mro/multimedia/images/?ImageID=7731

