

For 4 to 5 year olds

Context

If humans are to live on Mars one day, to survive its harsh conditions they will need shelter to protect themselves from radiation and the lack of atmospheric pressure; they will also need a supply of water, oxygen, food and energy. The European Space Agency has plans to build a village on the Moon to be a stopover for robotic missions to Mars; NASA has plans to 3D print houses on Mars!

In this activity, the children listen to a story and are introduced to the types of houses used by the characters encountered. They learn about robotic rover Rosalind Franklin and they go on to construct Martian shelters for the robot, describing the 2D and 3D shapes they have used.



National curriculum links

Expressive arts and design:

- Use various construction materials
- Construct with a purpose in mind, using a variety of resources

Maths - shape, space and measure:

- Use shapes appropriately for tasks
- Use familiar objects and common shapes to create and recreate patterns and build models

Resources

- Cardboard tubes
- Boxes
- Plastic bottles
- Sticky tape
- Scissors
- Paper fasteners
- String
- Glue
- Paints
- 2D paper shapes
- Coloured paper

Lesson starter

'Q Pootle 5' by Nick Butterworth – Q Pootle and his friends live on planet Oki Doki in a variety of houses. Read the story book and then watch Q Pootle's House Guest video. In the video, a guest needs somewhere to stay. www.youtube.com/watch?v=dF07LL6y-m8

The characters in this popular series travel from planet to planet in their spaceships. Explain that today's adventure was just a story but scientists are actually sending a robot called Rosalind on a long journey to planet Mars. Read the letter from Rosalind asking for help (Activity sheet 1). The robot needs a shelter to protect her from the dust on Mars. Can the children help?



Main activity

Ask whether the children recall any of the different houses and structures from the story.

- Can they describe the materials used?
- Do they think they could help to build a shelter for Rosalind using these materials?

Show the children an assortment of building materials, 3D containers, and a variety of 2D coloured shapes. Discuss the shapes and together identify them and discuss their properties. The children work together discussing the materials, what they could be used for and how they could be joined together. Using the range of materials, they construct for a purpose. They paint the models and using the 2D paper shapes, they decorate their structures.

During the activity, draw attention to the shapes, ask the children to consider which materials would be best for a wall or roof and which shapes would be best for a window, a door, tiles on the roof or patterns on the walls.

Plenary

Children present their construction to their peers and explain what the process has been. Can they point to and name 2D and 3D shapes used? Allow time for questions and answers. Review the process they have gone through and together evaluate the usefulness of the finished structures, considering the harsh conditions on Mars.

- Would they be strong enough in windy weather?
- How could we find out?

Photographs can be taken, and together, everyone can plan a follow up letter to be written by the children and 'sent' to Rosalind, explaining that the structures have been made and which ones they recommend, together with a list of instructions explaining how to make them. Explain to the children that humans have not yet travelled to Mars because it is so far away but maybe one day, astronauts may be able to visit.

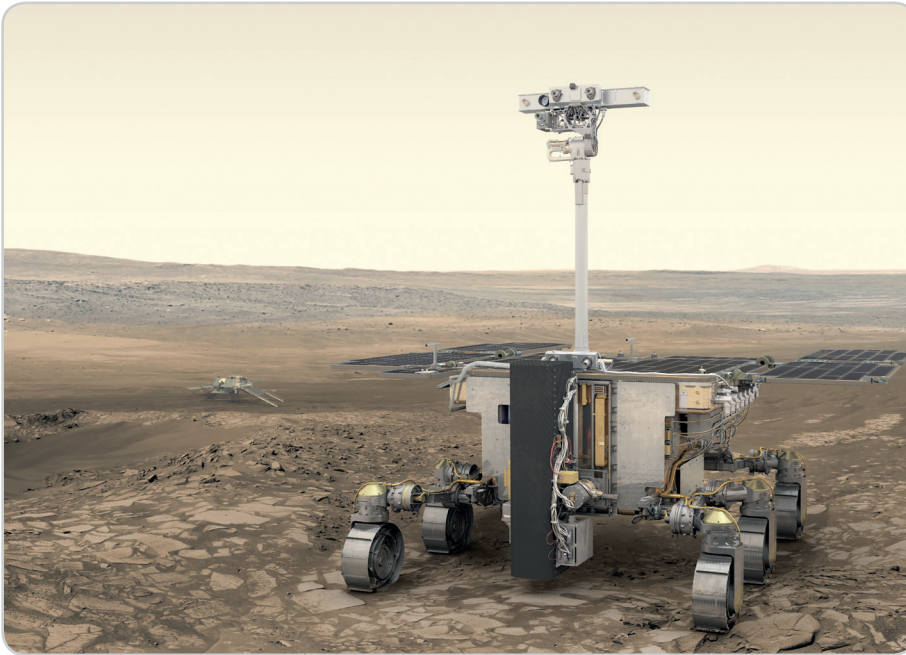


Further activities

- Children, with support, write a list of instructions for building their shelters
- Test whether the models can withstand windy weather; use a hand held fan or hairdryer to blow them
- They compose letters to Rosalind and make drawings of their designs
- They discover more about planet Mars through books and internet

STEM Vocabulary

Shape names - 2D and 3D	Fix
Build	Make
Join	Strong



Dear Children

My name is Rosalind. I am a robot and I am getting ready for a long journey to a planet called Mars, far, far away in outer space. It is very windy, dusty and cold there.

On Mars I will be doing very important work, travelling around and collecting samples of Mars soil. I will tell scientists back on Earth all about what I find. I am going to get covered in dust. I think a shelter would help keep me clean but I am not sure what it should be like. Would you help me? Would you build some models and send me your ideas? What materials will you use? What shapes will you choose? I look forward to hearing from you.

Thank you

Love Rosalind xxxx

