



Why is Mars red?

Journey to Mars

time

25 & 20
minutes,
spread across
2 lessons

learning outcomes

To:

- know that the soil on the planet Mars contains iron
- know that rust is a result of iron reacting with oxygen (in the presence of water)
- know that the planet Mars is reddish-brown because the iron has turned to rust

end product

- a container containing an imitation of the soil on Mars

materials needed

- photograph of Martian landscape (Appendix)
- 12 containers (e.g. plastic dishes)
- 2 jugs of water
- soap-free steel wool (NB DO NOT USE stainless-steel wool)
- sand
- rusty nail
- colouring pencils

Tip. The experiment will need to stand for three days and the children will need to be able to look at it every day. So you need to start this lesson at the beginning of the week.

Preparation

For the activity **Mars** you will need the photograph of the Martian landscape from the Appendix.

For the activity **Why is Mars red?** prepare 12 containers, each containing a shallow layer of sand. Pull the steel wool apart, so that the children can scatter the grains of sand between the fibres. You need to create a large surface area of steel wool. Reserve some sand for later in the experiment. You will need this to sprinkle over the top of the steel wool. Prepare the jugs of water. The children's research project will take three days. Take care when handling steel wool and rusty nails. Ensure the children avoid touching their eyes or mouths and wash their hands thoroughly at the end of this lesson.



Mars 10 min.

Ask the pupils if they have heard of the planet Mars. Encourage them to tell the class what they know about this planet. If they mention Martians, explain that most people do not believe in Martians. There is no evidence of life on Mars. However, millions of years ago, conditions on Mars may have been very different and living things may have existed. Ask the children if they know what colour Mars is. Show the photograph of the Martian landscape. Explain that the surface of Mars is reddish-brown. This is why Mars is known as the Red Planet.



The children find out why the soil on the planet Mars is reddish-brown.



Why is Mars red? 15 min.

Ask the children if they have ever seen reddish-brown spots on metal (for example on their bike handlebars). Where do these spots come from? What is it?

Organise the children into pairs. Give each pair of children a container with sand. Also give them the steel wool, which has been pulled apart. Explain that the sand represents the soil on Mars. The children put the steel wool in the container. The bottom of the container needs to be completely covered in steel wool. The children scatter the sand in the container. They need to make sure the sand is well mixed in with the steel wool. The steel wool needs to be covered in sand.

Go round the class with the water jugs and pour a little water into all the containers. The sand and the steel wool should be very damp, but there must not be a layer of water in the container.



For Task 1 on the worksheet, the children draw and describe what their container looks like on Day 1. Leave the containers on display for the next few days. Encourage the children to look at their experiment every day and add water to the container to stop it drying out. Ask to record their findings for day 2 and 3 on the worksheet. They need to pay special attention to the colour of the piece of soil.



Red 10 min.

After three days discuss the results of the experiment using Task 2 on the worksheet. What happened during the experiment?

Did the sand turn red? Explain that the steel wool contains iron. This iron started to rust. The rust has turned the sand a reddish-brown colour, as if the grains of sand have been painted with rust. That is what happens on Mars as well. Explain that there is a lot of iron in the ground on Mars. That is why we see Mars as a red planet. Pass the rusty nail around the class, so that the children get an idea of what rust looks like on 'real' objects, and what it feels like. This will make it clear to them that rust occurs on the Earth as well as on the planet Mars.



What else rusts? 10 min.

Encourage the children to think of other things that can rust. Show the children as many rusty objects as possible (for example parts of a bicycle).

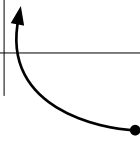


Why is Mars red?



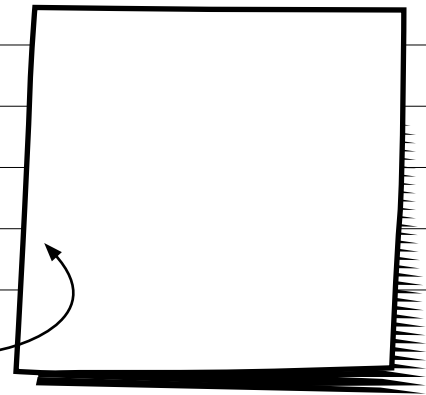
1 Why is Mars red?

day 1

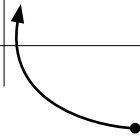


describe HERE
what the sand
looks like

draw HERE
what the sand
looks like

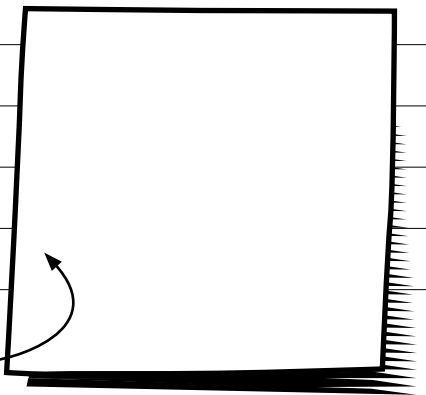


day 2

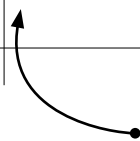


describe HERE
what the sand
looks like

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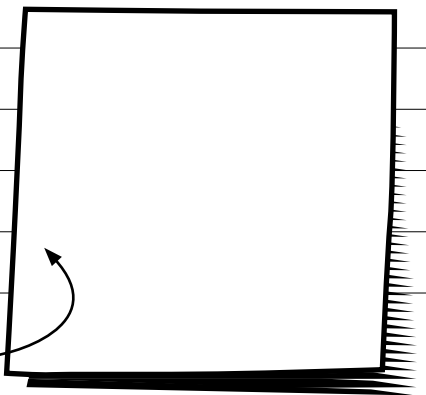



day 3



describe what the
sand looks like
HERE

draw HERE
what the sand
looks like



2	Red
a	Why is the sand reddish-brown?
	
b	The soil on Mars is reddish-brown too. Why is that?

