



# Activity 1: Why Is Mars Red?

## Introduction

The soil (dust) on Mars contains iron, one of the elements found in nature. People have used iron to make things like tools and weapons for more than 3,000 years.

Astronomers believe that Mars once had liquid water and it has a tiny amount of oxygen. When iron mixes with water and oxygen, it produces iron oxide, or rust.

Rust is reddish brown in color. That's where Mars gets its name, the Red Planet, because it's soil is full of iron turned to rust.

## Supplies

- Photograph of the Martian landscape (provided)
- Two jugs of water
- Small tray filled with 1-2 cups of light-colored sand
- Rusty nail or other rusty object
- Pens, pencils
- Crayons and/or colored pencils

### Work in teams of 2-3 kids. For each team:

- Plastic container or small tray
- About 1 cup of light-colored sand
- 1-2 **plain steel wool pads** (do NOT use soap pads or stainless steel pads)
- Worksheet to record observations (one for each child, see the template on page 87)

Plain steel wool pads look like this:



**This experiment takes 3 days to complete**

## Get kids thinking

Mars is sometimes called the Red Planet because of the color of its soil. How did the soil become red or rusty colored. Have you ever seen a rusty object — maybe the handlebars on your bike or an old nail you found in your neighborhood. **Ask kids:** Do you have any ideas about why the metal turned rusty?



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Explain to the kids that water is the culprit! When water (from rain, for example) mixes with air (oxygen) and the iron in your bike handlebars or a nail, a chemical reaction starts. That chemical reaction changes iron to iron oxide, or rust. The color of your handlebars will turn from silver to rusty red or rusty brown. That's what happened on Mars.

**Iron + Oxygen + Water = rust**

In this activity, kids will be creating their own Martian soil.

### Let's get started!

Give each pair of kids a container with sand. Also give them 2-3 pads of steel wool, which you've pulled apart. Explain that the sand represents the soil on Mars. Have the kids put the steel wool in the container and mix the sand and steel wool.

Go around the room 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 shouldn't be a layer of water in the container.

Tell the kids that they will be observing their sand over 3 days. Ask the kids to record what they see each day, in words and pictures. Give each child their own worksheet.

**Create two "controls" for the experiment:** (1) an extra tray filled with sand and steel wool, but NO water; and (2) an extra tray filled with sand and enough water to moisten the sand but NO steel wool. Kids will compare the controls with their own containers to observe the difference that water and steel wool make in creating the rusty soil.

On days 2 and 3, add a bit of water to each child's tray and control #2 to keep the sand from drying out.

**Ask kids:** What happened during the experiment? Did the sand turn red? Why? If none of the theories are right, tell the kids that the steel wool contains iron and when mixed with water and air the iron starts to rust. The rust mixes with the sand to turn the whole mixture reddish-brown.



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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. **What else rusts?** Encourage the kids to think of other things that can rust.



Photo © First Grader At Last

### More activities

Video: Why Is Mars Red? (Mystery Doug)

[https://www.youtube.com/watch?v=eAj\\_f6JjOUo](https://www.youtube.com/watch?v=eAj_f6JjOUo)

# Why Is Mars Red? The Martian Soil Experiment

My name: \_\_\_\_\_

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## Day 1

Describe what the sand looks like:

Draw what the sand looks like:

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## Day 2

Describe what the sand looks like:

Draw what the sand looks like:

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## Day 3

Describe what the sand looks like:

Draw what the sand looks like: