mystery science

Grades K-5
Mini-Lesson: “Why is Mars red?”

VIDEO TRANSCRIPT

VIDEO 1

Hi, it's Doug! Everyone's seen a globe of the Earth before, but did you know that they make globes and maps of other planets, too? This is a globe of the planet Mars. You can see it has no oceans or continents, but it does have darker spots and lighter spots. Each of these even has names.

Someone named Emma has a question about Mars. Let's give her a call now.

[Video Call]
- Hi, Doug!
- Hi, Emma!
- I have a question for you. Why is Mars red?
- That's a great question.

Sometimes, people call Earth the blue planet, but that's just being kind of poetic. We all know that Earth isn't just one color. From space, you can see blue for the oceans, but also green for much of the land, and white for the clouds and snow. So is Mars really the red planet?

Well, it's not just something people say. You can even see Mars for yourself in the night sky, and it really does have this reddish-orange color to it. When you look even closer, like in a telescope, you can see it even better. So why is it reddish-orange like this?

We didn't really know for sure until we were able to travel there. No human being has been to Mars yet, but using rockets, we've been able to send several robots and cameras to Mars over the years. Now we have photographs of Mars from up close, including even from its surface. This is what Mars looks like from the surface. Wow!

So the reason Mars is such a red planet is because most of its surface is covered in reddish-orange rocks and soil. But why are these red? What do you think makes the rocks and soil colored red?

VIDEO 2

The rocks and soil on Mars turn out to contain many small bits of iron, something you probably recognize here on Earth. Iron is a metal that we use to make lots of things—bicycles, railings, frying pans. You probably know that things with iron in them can rust if they've gotten wet. They turn a reddish-orange color.

Now, there are other reasons that things rust. Even just air that's full of lots of oxygen will make things rust over time. Water simply speeds up rusting. But wait a second, though. Does that mean Mars is red because its rocks have rusted? Why would Mars' surface have rusted?

Well, one idea is that Mars' rocks look rusty for the same reason things rust here on Earth—water. The idea that Mars might have once been covered with water is really exciting, if

true. For one thing, it could mean that there's still water hidden deep down beneath the rocks and soil, which would make it a lot easier for human beings to one day live on Mars. After all, water is one of the most basic things we need.

The latest robot that we've sent to Mars, called the InSight Lander, is equipped with a special robotic digging tool. To be funny, scientists have named it "The Mole," but it doesn't look like a mole at all. This robotic mole is actually going to dig 16 feet down into Mars' surface to measure the temperature and help us figure out if it's even possible for liquid water to still exist down there.

And finding water on Mars isn't just exciting because we could use it. It could also mean the possibility of finding life on Mars, since every living thing that we know of needs water to survive. So far, we haven't found any signs of alien life, not even alien plants or animals on Mars' surface. But if there is water beneath the soil, it might mean that there used to be life on Mars a long time ago. Nobody knows for sure. It's exciting to think we could find out.

So in summary, Mars is red because its surface is covered in rusty reddish-orange rocks and soil. It's likely that Mars was once covered in water and it's possible that it still has water hiding beneath its surface today.

That's all for this week's question. Thanks, Emma, for asking it!