mystery science

Grades K-5
Mini-Lesson: “How close could an astronaut get to the Sun?”

VIDEO TRANSCRIPT

Hi, it's Doug! What's the hottest thing you know? I recently got this torch for doing some science experiments, and the flame on it is really hot. Still, it's not as hot as the Sun.

Someone named Lara has a question about the Sun. Let's give her a call now.

[Video Call]
- Hi, Doug!
- Hi, Lara!
- I've got a question for you. How close can an astronaut get to the Sun?
- That's a great question.

Astronauts wear special suits that protect them from extreme hot and extreme cold. But these spacesuits aren't strong enough to deal with the intense heat of the Sun. If an astronaut got too close to the Sun, they'd burn up.

Still, it would be really interesting if we could get close to the Sun. Think of all the questions you might be able to answer. Questions like, "What's it made of?” "Is there any part of it we could stand on?" And, "How hot is it, exactly?" Scientists have been wondering questions like these for a long time now.

Some of these questions they can answer without leaving the Earth. One way they answer questions about the Sun is by using a solar telescope. That's this—it's a telescope with special equipment on it that makes it safe to look at the Sun. Here's the view when you look through one of these solar telescopes. It's incredible. You could actually see the surface of the Sun. And you notice these hot flames that are shooting off the Sun's edge. You see, just using telescopes, we've been able to figure out that the Sun is a ball of hot gas.

Still, we have lots of other questions about the Sun, where it would be helpful if we could just get close to it. If sending an astronaut isn't an option, what could we do? What do you think?

Now would be a good time to pause the video and discuss.

Okay. You ready?

One idea you might've had is, what if we sent something instead of a person? Like, what if we sent a spacecraft? A spacecraft is basically a small spaceship that doesn't have people on it, but it does have cameras that can help scientists get pictures and collect information.

They tried doing this back in the 1970s. NASA sent a spacecraft called Helios. This is what it looked like. They sent it closer to the Sun than ever before, but they didn't let it get too close, because they knew it would melt if it did.

Now, we're ready to try something different. On August 12th, 2018, scientists at NASA launched a new spacecraft. It's called the Parker Solar Probe. This is a real video from the day that it was launched into space. And this time it's going to travel all the way to the Sun. This is an artist's

animation of what it might look like as it gets close. Once it gets there, it's actually going to touch the very outer edge of the Sun.

But how? Wouldn't it just melt?

Well, scientists have invented a new material to help keep the spacecraft from getting too hot. Here's what it looks like—it's kind of like a sponge. It protects so well from the heat that you could put your hand only inches away from a blowtorch and not get burned.

When they built the Parker Solar Probe, they surrounded it with a shield made out of this new material. So the probe should stay protected from the Sun's heat. Eventually, once the probe gets further into the Sun, it will melt, but not before sending us lots of photos and information. Hopefully leading us to new knowledge about the Sun.

So in summary, scientists are curious to learn more about the Sun by getting closer to it. Since they don't want to risk sending an astronaut, they're sending a spacecraft.

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