mystery science

Grades K-5
Mini-Lesson: “How do astronauts get ready for space?”

VIDEO TRANSCRIPT

VIDEO 1

Hi, it's Danni! Have you ever looked at the moon and wondered what would it be like to go there?

- Ignition sequence start, six, five.

In 1969, astronauts set out to visit the moon for the first time. People around the world were excited and nervous. Could they do it? It was a daring plan, and it worked.

- The eagle has landed.

The first person walked on the moon.

- That's one small step for man.

And millions of people all over the world watched and cheered.

- "One giant leap for mankind."

It was an incredible moment in history. And now a new group of astronauts are preparing to reach the moon. They're part of the Artemis program. Artemis astronauts plan to live on the moon for almost a week. It'll be the first time anyone has tried that, and it's happening in your lifetime.

- Three, two, one. (engines firing) And lift off!

You will get to see history as it happens. Someone named Sophia has a question about space. Let's give Sophia a call now.

[Video Call]

- Hi, Danni!

- Hi, Sophia!

- I have a question for you. How do astronauts get ready for space?

- Great question.

While this Artemis moon landing is still years away, astronauts are already preparing, like astronaut Jessica Watkins. Jessica Watkins is a scientist who studies rocks and rocky planets like Mars. She went through intense training to become an astronaut, and now, she's already spent more than 150 days in space. Jessica Watkins has handled all kinds of challenges in space from fixing machines to growing food, but this new trip to the moon will have big challenges. No one has lived on the moon for six days before. You might already know some of the ways the moon is different from Earth. For one, there's no air to breathe. Astronauts need to wear special suits with oxygen. There's also very little gravity to hold astronauts down. They need to get used to moving their bodies in new ways. So how do astronauts get ready for such

a different place? I'm curious, what do you think? If you were an astronaut, what would help you get ready to work on the moon?

VIDEO 2

A lot goes into getting ready for the Moon, but some of it is similar to how you might get ready for a soccer game or a concert. Astronauts practice. To practice, astronauts need someplace on Earth that's like the Moon, someplace with no air to breathe, where their bodies will be weightless and floaty. Can you think of a place like that? Well, here's one of my favorite places. Exploring underwater makes me feel like an astronaut. Maybe you've had the same floaty experience. It turns out, real astronauts practice underwater, too. Here's astronaut Jessica Watkins in her spacesuit. On land, it's heavy, but underwater, it feels weightless. She can practice moving and breathing in her suit the way it would feel on the Moon. And check this out. It's a training station in the ocean. This is where Jessica Watkins and her crew mates lived for over a week underwater. There's not much room inside. Everyone has to work together to stay safe and get jobs done. It's a lot like being in space. That's why practicing teamwork skills is an important part of how astronauts get ready. Now, look at this. It's another place astronauts go to practice for the Moon. Doesn't it look like another planet? But it's a desert in the US state of Arizona. Here, astronauts get ready for what it will be like doing different jobs on the Moon. They often practice at night and shine lights that create confusing shadows to make it look even more like the Moon. Jobs that seem simple, like collecting rocks, need step-by-step planning and special tools. I mean, watch this. This is a real video of an astronaut on the Moon in 1972. He's trying to use a hammer, but it's hard to hang onto. He accidentally dropped it. And do you see the problem? Now, he can't pick it up because the spacesuit doesn't bend. To plan ahead for

problems like this, astronauts work with scientists and engineers to test out tools being created for the Moon. They try everything: from a scoop for collecting rocks to a vehicle that could be the astronauts' home as they explore the Moon on future trips. Astronauts spent a week living in a test vehicle. It mostly worked well, except the toilet system got seriously smelly, but that's what practice is for. It's much better to fail on Earth than on the Moon. The team can fix and improve things here and not 240,000 miles away from home. When it's finally time to head into space, Jessica Watkins and her fellow astronauts will be ready. All that practice will help them accomplish big things. They plan to travel farther into space than any humans have gone before, to visit an unexplored part of the Moon. And through future Artemis missions, the first woman and first person of color could walk on the Moon. That's an important step forward. 60 years ago, when America's first astronauts were selected, women and people of color were unfairly excluded. Back then, Jessica Watkins and many of her teammates would not have had the opportunity to become astronauts. But now, they're ready to make history. And you can follow in their footsteps. This Artemis Moon mission is practiced for even bigger plans, like building a station on the Moon and someday sending people to Mars. This is one small step into our solar system. There's so much more out there, and it will take the teamwork of our entire human family to explore it. Future history makers like you have the potential to make big things happen. For updates on the Artemis program, you can follow NASA online. And if you're curious to know more about being an astronaut, check out our interview with another Jessica on the Artemis team.

> - Hello, everybody down there on the planet Earth. My name is Jessica Meir and I am a NASA astronaut currently on board the International Space Station.

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