SPACE ACE

ASK A SPACE SCIENTIST

Our universe is full of mysteries, and some of the most mind-boggling are in space. Curious kids asked questions, and we sent them to a space scientist. Have questions about space? Send them to brilliant@usbnc.org (with your name and age).

When will humans be able to live on Mars?
– Roya, age 15

The Mars helicopter, named Ingenuity, makes the first powered, controlled flight on another planet when it lands on Mars in 2021.

Hi, Roya,

Mars is a pretty desolate place to live, but with the proper equipment, humans explore harsh areas on Earth, such as Antarctica and the deep sea. Living on Mars is possible with preparation. For example, the air on Mars is mostly carbon dioxide. It's also about 100 times thinner than on Earth and has very little oxygen. Humans exploring Mars would need to provide breathable air for the habitats where they live and for their spacesuits. Because Mars is farther from the Sun than Earth, the average temperature on Mars is -80° F (-62° C), so a heating system would be a must. However, the biggest challenges to living on Mars are the costs and difficulties in developing spaceships to get us there, finding enough water to drink, and growing food.

Like many things in life, progress depends on the efforts we make. With the orbiters, landers, and even a helicopter paving the way for human exploration of Mars, we are making progress. But we have a long road ahead of us. Check out these and other steps NASA is taking on this road at **mars.nasa.gov**. – Steve

COSMIC QUIZ

Only Mercury and Venus orbit closer to the Sun than Earth does. Planets that orbit closer to the Sun from your location are called:

A) Dwarf planets
B) Sneaky planets
C) Inferior planets
D) Tatooine & Zilizag

Images: NASA/JPL-Caltech/SwRI/MSSS/Kevin M. Gill, NASA/Tony Gray and Tim Powers, NASA, NASA/ESA/Hubble, NASA/JPL, NASA/JSC, GeorgiosArt/Getty, rwarnick/Getty

What would you say is the most fascinating thing about being a scientist at NASA? – Setiyana, age 13

Hi, Setiyana,
I feel that the most fascinating thing about being a scientist at NASA is that there are always new challenges to explore and difficult problems to solve. And when you're engaged in solving a difficult problem, you just can't get bored! No one person can solve these challenges alone, so learning to work with other scientists and engineers as a team is essential. In the best teams I've been on, the members of the team learn from each other and come up with solutions that are better than any one person could have imagined. It can be an amazing and rewarding experience!
– Steve

Top: In 2021, astronauts (from left) Mark Vande Hei, Shane Kimbrough, Akihiko Hoshide, and Megan McArthur enjoy the first chili peppers grown in space. Bottom: Astronauts Kayla Barron and Raja Chari harvest cotton cell samples on the International Space Station in 2022.

BACK IN TIME

Johannes Kepler, a German mathematician born in 1571, discovered that planets orbit the Sun, not in perfect circles, but in ovals called:

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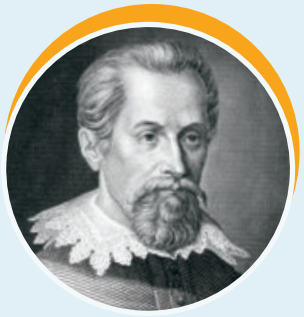

STEVE SCOTTI is *Brilliant Star*'s STEM Education Advisor and a Distinguished Research Associate at NASA Langley Research Center in Virginia, U.S. His background is in developing lighter, stronger materials and structures for aircraft and spacecraft. Watching the first astronaut launched into space inspired his interest in space exploration.

ON THE WEB

In our Space Ace video interviews, meet two amazing astronauts!

LELAND MELVIN was a pro football player and a NASA astronaut. When he went to space, it changed his perspective forever.

PEGGY WHITSON was a NASA astronaut and the first female commander of the International Space Station. She broke other records, too.

Check out both videos on Dr. Scotti's STEM Station at **brilliantstarmagazine.org/themes/DrScotti**

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