SPACE ACE

ASK A SPACE SCIENTIST

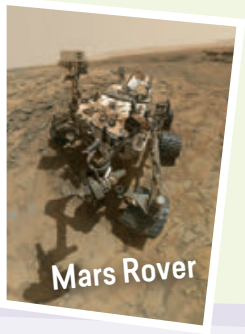
Our universe is full of mysteries, and some of the most mind-boggling are in space. Curious kids asked questions, and we sent them to two Bahá'í scientists who work for the National Aeronautics and Space Administration (NASA). We'll have guest contributors, too. Have questions about space? Send them to brilliant@usbnc.org (with your name and age).

What would happen if there were a planet, as big as Earth, right next to Earth? —Luthando, age 10

Hi, Luthando,

A planet as big as Earth that was right next to us might not last long because of something you are already familiar with—**tides**. The tides in the Earth's oceans are caused by gravity forces from the moon, but these forces are not very large, because the moon is much smaller than the Earth, and it's about 239,000 miles (384,000 km) away. But if a planet as big as the Earth were right next to us, the tidal forces would be very large, perhaps large enough to tear the two planets apart. Tidal forces are believed by some to have broken up a moon of Saturn which formed Saturn's rings, so perhaps a nearby planet would become rings around the Earth!

—Steve



Mars Rover

Any progress with sending people to Mars? —Luvuyo, age 13

Hi, Luvuyo,

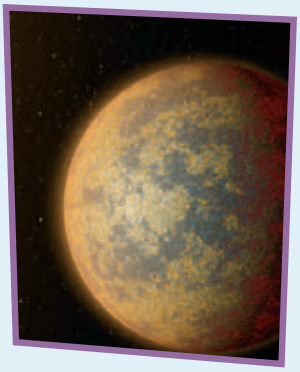
There are thousands of people around the world who are actively preparing to send humans to Mars. NASA plans to send humans into Mars orbit by 2039 at the latest. The Dutch non-profit foundation Mars One is shooting for a permanent departure in 2027. SpaceX has already successfully developed and launched their own rockets, and founder Elon Musk hopes to send humans to Mars in the next decade or two. It's a new space race, and odds are good you'll see humans on or near Mars in the 2030s.

—George

COSMIC QUIZ

These objects orbit stars outside of our solar system. Over 1,900 of them have been found. Scientists estimate that over 100 billion exist in our galaxy! These objects are:

A) Black holes
B) Exoplanets
C) Tardises
D) Wormholes
E) Space Stations



The answer is exoplanets. This is an artist's rendition of the planet "HD 219134b," the nearest exoplanet outside our solar system. It's 1.6 times the size of Earth.

CHARLIE CAMARDA is our guest contributor for this issue. He flew on the return-to-flight mission of Space Shuttle Discovery (see below) in 2005. He traveled 5.8 million miles during his two weeks in space. He's now the Senior Advisor for Engineering Development at NASA's Langley Research Center.

What is it like to be inside of a spaceship? – Nika, age 7

Hi, Nika,

I actually rode to space one time in the space shuttle. It flies much like a typical rocket and blasts off straight up during launch. However, when it returns to Earth, it glides like a plane with the engines turned off and lands on a runway. I also trained on another space vehicle built in Russia, called the Soyuz. It was a much smaller vehicle which transports only three people to space, whereas the space shuttle used to fly as many as seven astronauts at one time to space.

Launching into space inside a spaceship is very exciting and can be a little noisy, with some vibrations. It is very much like some of the rides you may have ridden at an amusement park (like the roller coaster). You are inside your spacesuit during launch and strapped in tightly, with belts across your shoulders, chest, and waist to hold you securely as the vehicle accelerates to three times the acceleration of gravity. This means that during launch your arms feel heavy and the pressure on your chest and rib cage increases, almost like having someone sit on your chest.

Once you reach space, you are in a near 0-gravity environment, and you can float out of your spacesuit and seats. This was probably the most fun for someone used to only playing and working on the surface of the Earth.

– Charlie
Astronaut STS-114

STEVE SCOTTI is a research engineer at NASA Langley Research Center in Virginia, U.S. He works to develop lighter, stronger materials and structures for aircraft and spacecraft. Watching the first astronaut launched into space inspired his interest in space exploration. He enjoys sharing his enthusiasm about science and space with kids.

GEORGE HATCHER is an avionics engineer at the Kennedy Space Center in Florida, U.S. He works on electrical systems of uncrewed rockets. He also studies planetary science at the University of Central Florida. Working for NASA is a dream come true for George. He's aspired to be an astronaut since he was three. He's one of 100 finalists in the Mars One Project, which aims to create a human settlement on Mars.

Images: NASA, NASA/JPL-Caltech