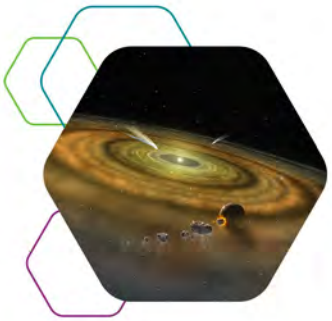

EXPLORING THE SOLAR SYSTEM

Solar Eclipse

Try this!

On a sunny day, you can make a model of an eclipse outside!

Tip: You can also do this activity in a dim room, using a flashlight (instead of the Sun) as your light source.

Hold the toy Moon and take two big steps back from the Earth ball. Position the Moon in between the light source and the big globe. Line up the Moon so it casts a shadow on the Earth.

Look carefully at the shadow. Are all parts of it equally dark? Does it cover the whole Earth?

Now try making the Moon's shadow move across the Earth. You're making a model of the path of a solar eclipse! During a real eclipse, what do you think people see when they look toward the Sun?

A solar eclipse occurs when the Moon moves between the Sun and Earth, casting a shadow on Earth.

A solar eclipse is a rare and beautiful event. In a *total solar eclipse*, the Moon completely blocks the Sun. In the places where the Moon's shadow falls on Earth, it gets dark and cool. Earth is the only place in the entire solar system where a total solar eclipse occurs!

During a total solar eclipse, the Moon casts a shadow on Earth.

All the planets in our solar system, including Earth, are constantly orbiting the Sun. At the same time, the Moon is orbiting Earth. Every once in a while, the Sun, Earth, and Moon line up just right so that the Moon is positioned directly between the Sun and Earth.

But the Sun is 400 times bigger than the Moon, so how can the Moon possibly cover the entire Sun? The Sun also happens to be about 400 times farther away from Earth than the Moon is. As a result of this amazing coincidence, the Sun and Moon appear to be about the same size. Since Earth is the only planet with a moon that is the same *apparent size* as the Sun, it's the only place in the solar system where a total solar eclipse can happen.

During a total solar eclipse, the light from the Sun is completely blocked by the Moon.

People have observed and tried to explain solar eclipses for thousands of years. For example, an ancient Chinese record notes a solar eclipse that occurred in October 2134 BCE, and an ancient Greek account notes an eclipse in April 648 BCE. Today, we know why solar eclipses happen, and we can predict when and where they'll occur.

Scientists are studying the 2017 solar eclipse from Earth and space, and people across the United States can experience this awe-inspiring event. *Safety note: It's important to be careful and protect your eyes when you watch a solar eclipse.*