

Parents' Guide to Lunar Eclipses: *September 27/28, 2015*

What is a lunar eclipse?

Every month, the Moon makes one trip, or orbit, around Earth. The Moon's orbit around Earth is tilted ever so slightly ($\sim 5^\circ$), so, for example, from the Sun's perspective, the Moon usually passes a little above or below Earth as it orbits around Earth. Occasionally, the Moon reaches a position where it is in a straight line with Earth and the Sun. When this happens, eclipses occur. A lunar eclipse happens when Earth is directly between the Moon and the Sun. Conversely, a solar eclipse happens when the Moon is directly between the Sun and Earth. There are at least four eclipses each year. A total lunar eclipse will be visible from most of North America on September 27 & 28, 2015. To see what time the eclipse will be visible from your location, enter your city at <http://www.timeanddate.com/eclipse/in/usa>.

During a total lunar eclipse, the Moon turns a reddish-orange color. Why? During a total lunar eclipse, Earth blocks the Sun's light from reaching the Moon. While the Moon remains completely within Earth's shadow, some sunlight still manages to reach the Moon. Light reaches the Moon because it is "bent" as it encounters the Earth's atmosphere. As the sunlight (which is made of all the colors of the rainbow) passes through the Earth's atmosphere, most of the blue colored light stays in the atmosphere. The remaining light that makes it to the Moon is a deep red or orange in color and is much dimmer than pure white sunlight.

Did you know?

- There are about two lunar eclipses each year – there are never more than three lunar eclipses in a year.
- A lunar eclipse usually lasts for a few hours whereas a solar eclipse typically lasts for a few minutes.
- A lunar eclipse can be viewed from anywhere on the night side of the Earth.
- Lunar and solar eclipses are closely related to each other – when there is a solar eclipse, a lunar eclipse will have occurred two weeks beforehand, or it will occur two weeks afterwards.

Lunar Eclipse



Upcoming Events

Find information and resources about upcoming celestial events and NASA mission milestones to share with your child at http://www.lpi.usra.edu/education/look_up.

Do Science at Home with Lunar Eclipses!

Why should children do science?

- Children are naturally curious about their world and science encourages continued curiosity and a deeper appreciation for nature.
- Science helps children develop critical thinking skills that can help them perform better in school, have more diverse job opportunities, and become better informed consumers and citizens.
- Science strengthens communication skills.

You are the most important role model your child has! By actively making science a part of family life, you send the message that science is important. Plus, participating in science doesn't require knowledge of math and science. It only takes curiosity, an

Lunar Eclipse Time!

Use the resources below to explore lunar eclipses with your child. Celebrate lunar eclipses by investigating websites and reading books together. See if any events are happening in your neighborhood through your local museum, planetarium, observatory, or astronomical club that you and your family can attend. Finally, watch for news stories to talk about with your child.

Selected Books

Eclipse!: The What, Where, When, Why, and How Guide to Watching Solar and Lunar Eclipses

Philip S. Harrington, Wiley, 1997, ISBN 978-0471127956

Whether you're a backyard astronomer, a dedicated eclipse chaser, or a teacher guiding students through their first eclipse experience, Eclipse! provides the in-depth, detailed, practical information you need to make the most of these thrilling celestial marvels of nature. For adult readers.

Eclipses (The Night Sky: and Other Amazing Sights in Space)

Nick Hunter, Heinemann, 2013, ISBN 978-1432975203

For ages 6-8, this book looks at solar and lunar eclipses, providing background information about the Sun, the Moon and our planet. The book covers what an eclipse is, what eclipses can look like, how they happen, the effects on wildlife, what people thought of eclipses in the past, how they are studied today, and about eclipses on other planets.

interest in learning, and talking about it, and having some fun together!

http://www.lpi.usra.edu/education/look_up

Websites

September 27/28, 2015 Total Lunar Eclipse

<http://www.timeanddate.com/eclipse/lunar/2015-september-28>

Lunar Eclipses for Beginners

<http://www.mreclipse.com/Special/LEprimer.html>

Lunar Eclipse Pics from Mr. Eclipse

<http://www.mreclipse.com/MrEclipse.html#Moon>

Lunar Eclipse Visualization: Shadow View

<https://svs.gsfc.nasa.gov/cgi-bin/details.cgi?aid=4340>

Lunar Eclipse Visualization: View from the Moon

<https://svs.gsfc.nasa.gov/cgi-bin/details.cgi?aid=4341>