

## Parents' Guide to Solar Eclipses: *October 23, 2014*

### What is a solar 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 solar eclipse happens when the Moon is directly between Earth and the Sun. Conversely, a lunar eclipse happens when Earth is directly between the Sun and the Moon. There are at least four eclipses each year.

A partial solar eclipse will be visible from most of North America on October 23, 2014. A partial solar eclipse occurs when a portion of the Sun is blocked by the Moon. (A total solar eclipse occurs when the entire Sun is obscured from view.) The exact timing of the eclipse and the amount of the Sun that will be obscured depends on your location. You can find a list of eclipse beginning and ending times for many U.S. cities at <http://eclipse.gsfc.nasa.gov/OH/OHtables/OH2014-Tab05.pdf>.

### Solar Eclipse Safety

If you plan to view any solar eclipse, remember to **NEVER** look directly at the Sun. There are a number of safe ways to view solar eclipses. More information about these methods can be found at <http://www.skyandtelescope.com/observing/how-to-watch-a-partial-solar-eclipse-safely/>.

### Do Science at Home!

Why explore science with your child?

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



## 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](http://www.lpi.usra.edu/education/look_up).

## Solar Eclipse Time!

Use the resources below to explore solar eclipses with your child. Start with creating a homemade eclipse viewer (projector) with household items! Celebrate solar 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.

### Make a Pinhole Projector to Safely View a Solar Eclipse!

<http://www.timeanddate.com/eclipse/make-pinhole-projector.html>

One of the easiest and safest ways to view an eclipse is to project its image on a screen using a pinhole projector. This website provides instructions for creating your own pinhole projector.

For more information on making science part of your family's life, please visit the Try Science program's website at [www.tryscience.org/parents/parent.html](http://www.tryscience.org/parents/parent.html).

### 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.

### Websites

How to Safely View a Solar Eclipse

<http://www.skyandtelescope.com/observing/how-to-watch-a-partial-solar-eclipse-safely/>

Eclipse Glasses & Safe Solar Viewers

<http://www.rainbowsymphonystore.com/eclipseshades.html>

Solar Eclipse: What You Should Know (YouTube)

<http://youtu.be/HrloqDXrzN4>

Solar Eclipses for Beginners

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

Solar Eclipse Pics from Mr. Eclipse

<http://www.mreclipse.com/Special/photo.html#solar>

[http://www.lpi.usra.edu/education/look\\_up](http://www.lpi.usra.edu/education/look_up)



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## Add a Creative Twist

*"The "why" of space exploration is a matter of emotions and instincts... It takes a variety of languages, including, those of art, music, and literature, to teach."*  
- Piers Bizony, "The Bigger Pictures"

Ever read a good science-fiction book or watch a futuristic movie like "Star Wars," "Star Trek," "Ender's Game" or "The Time Machine?" Science fiction is storytelling that reflects scientific thought and foresees and communicates a future based on the reality of today. Literature, movies, music and works of visual art all have the power to communicate an idea and elicit emotion from an audience.

Encourage your child to create an artistic interpretation of the Solar Eclipse!

### Solar Eclipse

Jacqueline Moliner is an avid science fan and professional artist. Her enthusiasm for all things Space inspires her to research the science behind celestial events and create her Cosmic Funnies series. This combination of art with science is a great example of a fun way she shares her passion with others. *Solar Eclipse* was motivated by the upcoming October 23, 2014 event.

You can see more of the Cosmic Funnies and follow Jacqueline's other work at <http://cosmicfunnies.tumblr.com/>

