



Grade Level

Kindergarten - 8th Grade

Lesson Length

15-20 Minutes

STEM Careers

- Astronomers
- Astrophysicist

Life Skills

- Critical Thinking
- Problem Solving
- Resiliency

Learn More

- Visit Raising Nebraska raisingnebraska.unl.edu
- Visit Hastings Museum hastingsmuseum.org

Virtual Fun

- <https://eclipse.gsfc.nasa.gov/solar.htmlXx>

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WHAT IS A SOLAR ECLIPSE

Science

This grab and go lesson helps students distinguish the different between a solar and lunar eclipse.

LEARNING OBJECTIVES

By the end of the lesson, students should be able to:

- Explain the difference between a solar and lunar eclipse
- Describe which part of the sun is visible during a lunar eclipse

EDUCATIONAL STANDARDS SUPPORTED

- NE 2.4.1.a Identify objects in the sky (the Sun, the Moon, the stars) and when they are observable.
- NE 2.4.1.b Identify objects that appear to move in the sky (the Sun, the Moon, stars)
- NGSS 1-ESS1-1 Use observations of the sun, moon, and stars to describe patterns that can be predicted.
- NE 5.4.1.b Recognize the motion of objects in the sky (the Sun, the Moon, stars) change over time in recognizable patterns.
- NE 8.4.1.b Describe the relationship between motion of objects in the solar system and the phenomena of day, year, eclipses, phases of the Moon and seasons
- NGSS MS-ESS1-1 Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.

MATERIALS LIST

- Moon cut out
- Chalk
- Black paper
- Yellow paper
- Sun cut out
- Scissors

PREPARATION *(Optional as students could do this step)*

- Cut out the moon
- Cut out a sun on plain yellow paper to be the same size of the moon. Make the sun round with no “rays” as the students will add these later.



INTRODUCTION

On August 21, 2017 Nebraska will experience a total solar eclipse. This eclipse will be visible to everyone in North America plus parts of South America, Africa, and Europe will see at least a partial solar eclipse. A solar eclipse like this only happens once in every 375 years for a certain location.

To view a solar eclipse safely, a person should wear solar glasses or have a telescope with a solar filter attached. A person should not look directly at the sun. During totality, one can remove any filters and look at the eclipse. Once totality is completed, all filters need to be used again.

OPENING QUESTIONS

What is the difference between a solar eclipse and a lunar eclipse?

A **solar eclipse** is when the moon casts a shadow on the Earth as it covers up the sun. A **lunar eclipse** is when the moon “disappears” behind the Earth’s shadow.

ACTIVITY 1: A MOVING EARTH

(Older students may skip this activity. This activity will work best outside or in a hallway where you have at least 20 feet of area to work with.)

Ask: How can the moon cover the sun in a total eclipse when the moon is much smaller than the sun? (The answer is perspective! The sun is about 400 times larger than the moon. However, it is also 400 times further away from the Earth than the moon is.)

To demonstrate this, have the teacher stand right in front of the class. Ask how much of the teacher students can cover with their hand. (Students will notice they can only cover up a small portion of the teacher.)

Have the teacher move 15-20 feet away from the class. Ask the class how much of the teacher can they cover up now with their hand. (Students should be able to cover up all or most of teacher with their hand)

Ask: Did the teacher shrink? (No) What changed? (The teacher moved further away, making him or her appear smaller, just like the sun.)

Vocabulary

Solar Eclipse: the moon casts a shadow on the Earth as it covers the sun

Lunar Eclipse: the moon “disappears” behind the Earth’s shadow

Totality: When the moon completely covers the sun

ACTIVITY 2: SOLAR SCLIPSE ART

- If the students are prepping the moon and sun, have them cut them out. Otherwise, give each student a piece of black paper, chalk, sun, and moon.
- Place the sun on the black paper and ask the students which part of the sun is missing. (The rays)
- Use chalk to draw rays all around the sun.
- Put the moon on top of sun. This is considered totality. Ask: Is the sun completely covered by the sun? (No, the rays are still showing)



REFLECT

Have the students partner up and explain the difference between a solar and lunar eclipse.

If possible, see if your students can explain a solar eclipse to another class using their art projects.



APPLY

Have the students experience the August 21st total solar eclipse if possible. NASA has an interactive map (<https://eclipse2017.nasa.gov/event-locations>) to see what time/how much of the eclipse you will see from any location.

References

NASA Eclipse Website.
NASA, 27 Aug. 2016.
Web. 04 Apr. 2017.
<<https://eclipse.gsfc.nasa.gov/solar.html>>.

We want to hear from you!

Let us know what you thought of the lesson
or send us a picture of youth participating in the lesson.

#NE4HSTEM #ECLIPSE2017

IMAGES

Solar Eclipse



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 *Life up close.*
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