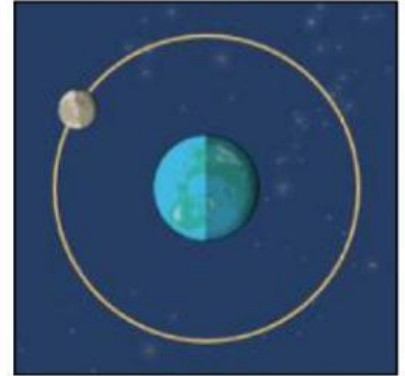


WORKsheet

Gizmo Warm-up

1. In the *Eclipse Gizmo*, make sure all shadows are off. Click **Play** () or **Fast forward** () and watch the Moon's orbit.

How does the view of the **Sun from Earth** (lower right corner of the Gizmo) change? Click **Pause** () and describe it.



An **eclipse** is the blocking or darkening of a celestial body (such as the Sun or the Moon). When part or all of the Sun disappears from view, it is called a **solar eclipse**.

2. Click **Play** or **Fast forward** and watch the **Moon from Earth**. How does this view change?

When the Moon is darkened, it is a **lunar eclipse**.

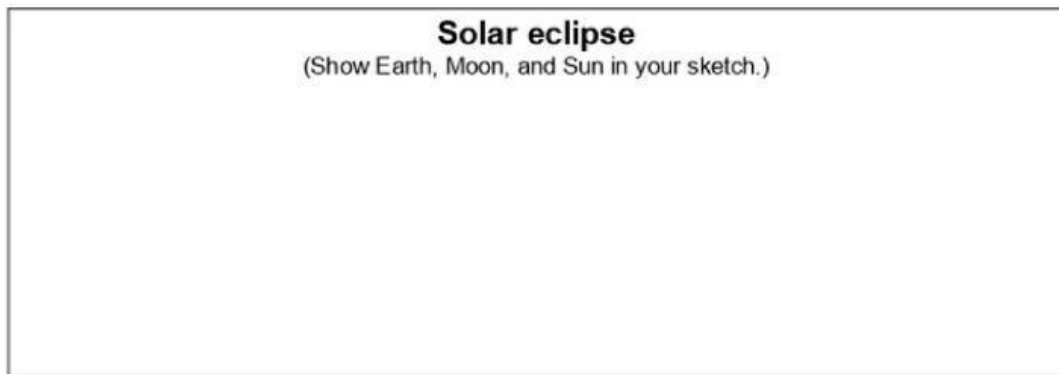
SOLAR ECLIPSE

Activity A: Solar eclipses	<u>Get the Gizmo Ready:</u> • Click Reset ()	 Sun from Earth
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Question: What causes a solar eclipse?

1. Observe: Experiment with Gizmo to decide why a solar eclipse occurs. (You can click **Play** or **Fast forward**, or simply drag the Moon around its orbit while the Gizmo is paused.)
2. Form hypothesis: What do you think causes a solar eclipse?

3. Run Gizmo: Turn on the **Moon shadow**. Click **Play** or drag the Moon until a solar eclipse occurs. How are the Earth, Moon, and Sun arranged at this time? Sketch them below.



4. Draw conclusions: During a solar eclipse, what is causing the Earth's view of the Sun to be darkened?

5. Analyze: The faint outer atmosphere of the Sun, called the **corona**, is visible in the view on the right. Manipulate Gizmo until you see this. What is needed for this to happen?



Sun from Earth

Corona



Activity B: Lunar Eclipses	<u>Get the Gizmo Ready:</u> • Click Reset. • Turn off the Moon shadow, but keep the Earth shadow on.	 Moon from Earth
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Question: What causes a lunar eclipse?

1. Form hypothesis: What do you think causes a lunar eclipse? (Use your knowledge of solar eclipses and feel free to run the Gizmo to help you.)

2. Run Gizmo: Click **Play** or drag the Moon until you see a lunar eclipse. Sketch and label the Earth, Moon, and Sun at this time.

Lunar eclipse (Show Earth, Moon, and Sun in your sketch.)

3. Draw conclusions: What causes the Moon to be darkened in a lunar eclipse? _____
- _____

4. Analyze: Shadows have two parts. The dark inner part is called the **umbra**. The areas of partial darkness on the edges are called the **penumbra**. Because of this, there are three different types of lunar eclipses. Explore them in the Gizmo, and sketch them below.

Description	Moon fully in penumbra	Moon in both umbra and penumbra	Moon fully in umbra
Name	Penumbral eclipse	Partial lunar eclipse	Total lunar eclipse
Sketch of Moon			
(describe colors)	Color:	Colors:	Color:

Name :

Date : Wednesday, 28 May 2025

Grade : 9

Topic : Lunar Cycle