

Lesson 20: How Far Away Is the Moon?

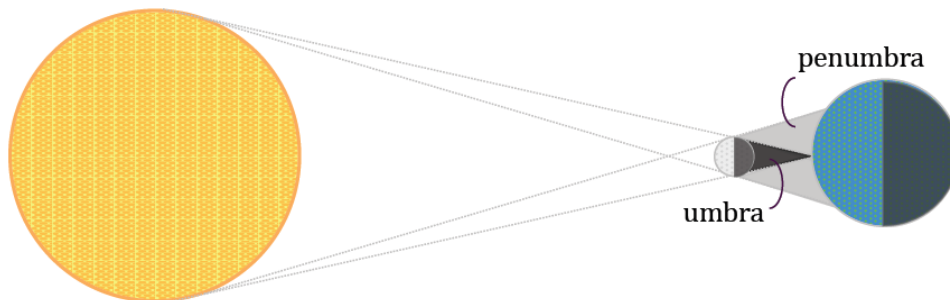
Classwork

Opening Exercise

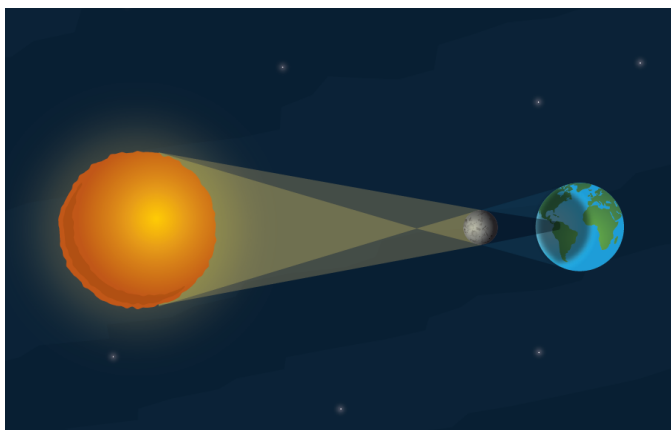
What is a solar eclipse? What is a lunar eclipse?

Discussion

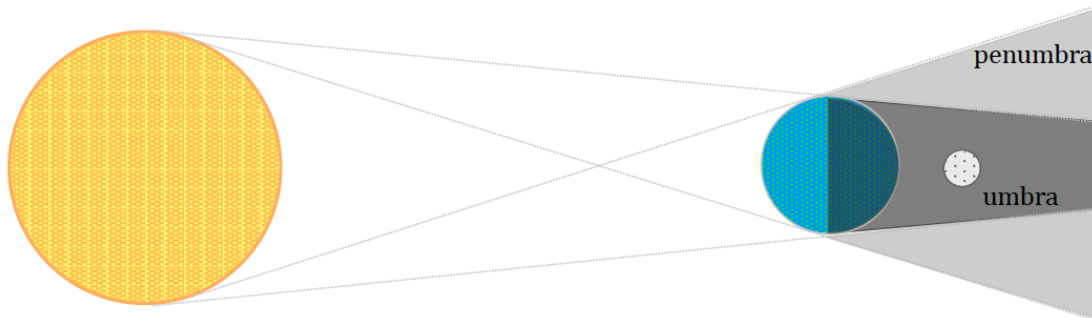
Solar Eclipse



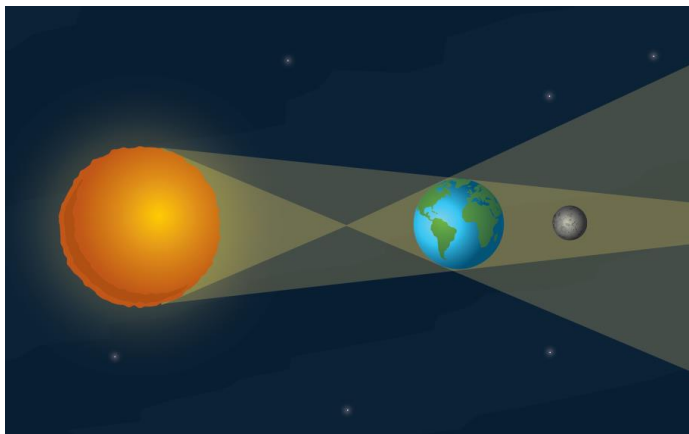
3D view:



Lunar Eclipse



3D view:



Example

- a. If the circumference of the earth is about 25,000 miles, what is the Earth's diameter in miles?

b. Using (a), what is the moon's diameter in miles?

c. How far away is the moon in miles?

Problem Set

1. If the sun and the moon do not have the same diameter, explain how the sun's light can be covered by the moon during a solar eclipse.
2. What would a lunar eclipse look like when viewed from the moon?
3. Suppose you live on a planet with a moon, where during a solar eclipse, the moon appears to be half the diameter of the sun.
 - a. Draw a diagram of how the moon would look against the sun during a solar eclipse.
 - b. A 1 inch diameter marble held 100 inches away on the planet barely blocks the sun. How many moon diameters away is the moon from the planet? Draw and label a diagram to support your answer.
 - c. If the diameter of the moon is approximately $\frac{3}{5}$ of the diameter of the planet, and the circumference of the planet is 185,000 miles, approximately how far is the moon from the planet?