



# Moon Movement

## Activity

Eclipses occur when one body of the Earth-sun-moon system blocks the light by coming in between the other two bodies. Solar eclipses occur when the Moon is between Earth and the Sun (new moon) and is aligned to block the view of the Sun from Earth. Lunar eclipses occur when Earth is between the Moon and the Sun (full moon) and is aligned to block the light from the Sun to shine on the Moon as viewed from Earth.



## Procedure

### Eclipse 1

1. Stand in a circle around the lamp. Hold your “Moon on a Stick” at arm's length. The lamp represents the Sun, your head represents Earth, and the ball on a stick represents the Moon. Stand facing the Sun (lamp).
2. Move the Moon (ball) around your head to model the revolution of the Moon around Earth. Move the Moon (ball) in orbit until it completely blocks your view of the Sun (lamp).
3. What type of eclipse is this?

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4. Take turns looking at your lab partner's face during the solar eclipse. How much of his/her face is in shadow? During a solar eclipse, the Moon makes a small shadow on Earth. This small size explains why a solar eclipse can't be seen from all locations on Earth.

### Eclipse 2

5. Stand so that the Sun (lamp) shines directly on the back of your head.
6. Move the Moon (ball) in orbit until Earth (your head) casts a complete shadow on the Moon. What type of eclipse do you have now?

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7. Return to your seat to complete the rest of this task.

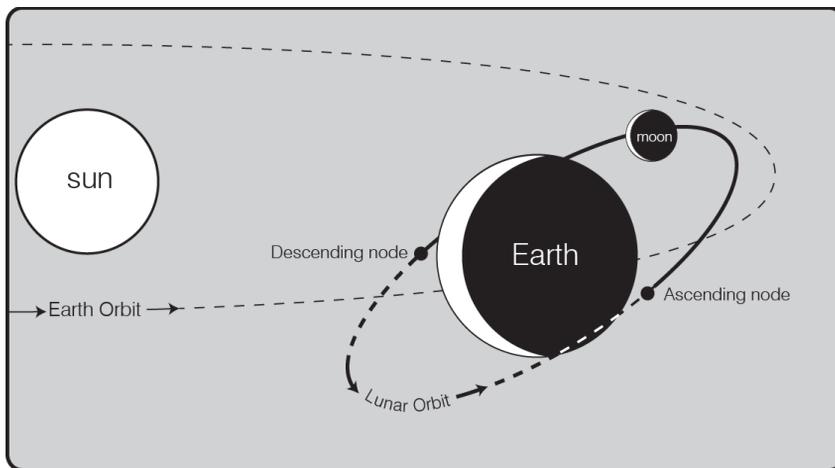




## Moon Movement

### Activity (Eclipse 2), continued

10. Look at the Moon Movement diagram below. Do Earth and the Moon orbit in the same plane? If the Moon revolved around Earth on the same plane that Earth revolves around the Sun, lunar and solar eclipses during each lunar cycle would be possible. However, the plane of the Moon's orbit (around Earth) and the plane of Earth's orbit (around the Sun) is slightly different and angled when compared to each other. This angle difference is 5 degrees, it is exaggerated in the diagram to clearly show where the two planes intersect. How many places do the two planes of orbit intersect on the diagram?



Moon Movement Diagram

11. Answer the following questions.
- Do more people see a solar eclipse or a lunar eclipse?
  - What is the phase of the Moon during a solar eclipse? A lunar eclipse?
  - How often do we have a solar eclipse or a lunar eclipse?

