



## ECLIPSES

Science SOL 6.8e

Objectives: After lecture/video, students will be able to:

- Restate the definition of an eclipse
- Describe a solar/lunar eclipse
- Explain why eclipses are not seen every month
- Explain why eclipses are not visible over all of the earth

Procedure:

- 1) Place the pictures of solar and lunar eclipses (above) onto the document camera. Give the students one minute to examine the pictures.
  - a. Do you know what these pictures represent?
  - b. Can you tell the difference between them?
  - c. Which of these eclipses can I not look directly at?
- 2) Confirm that the pictures are indeed of eclipses. Explain that an eclipse happens when one object comes between two other objects in space.
  - a. Demonstration – tell the students that you will demonstrate an eclipse. The projector will be the sun, and the screen will be the earth. Explain that the teacher will be an object coming between the sun and the earth. As you walk between the ‘Sun’ and ‘Earth,’ tell the students that you have just caused an eclipse. Show students that you have now cast a shadow on the object behind you (the Earth). Explain that this is exactly what happens in Space.
- 3) Hand out the worksheet (below), and discuss the blanks with the students. Make sure that students label the objects in the diagram (the Sun is already labeled for them)
  - a. Looking at the pictures and the sizes of the planets shown, how would I fill in these blanks?
  - b. Looking at the diagram and the sizes of the objects shown, how big is the shadow that falls on Earth during a solar eclipse? How big is the shadow that falls on the moon during a lunar eclipse? Which is bigger?
  - c. Using this information, are you able to see a solar eclipse everywhere on Earth? What about a lunar eclipse?
  - d. Thinking about what we know about the phases of the moon, during which phase of the moon can I see a solar eclipse? Lunar eclipse? Why?
- 4) Direct students’ attention to animations/recordings of eclipses.
  - a. Solar -  
[http://www.classzone.com/books/earth\\_science/terc/content/visualizations/es2505/es2505page01.cfm?chapter\\_no=visualization](http://www.classzone.com/books/earth_science/terc/content/visualizations/es2505/es2505page01.cfm?chapter_no=visualization)
    - i. Make note of the Sun’s corona, visible only during total eclipses
  - b. Lunar -  
[http://www.classzone.com/books/earth\\_science/terc/content/visualizations/es2504/es2504page01.cfm?chapter\\_no=visualization](http://www.classzone.com/books/earth_science/terc/content/visualizations/es2504/es2504page01.cfm?chapter_no=visualization)

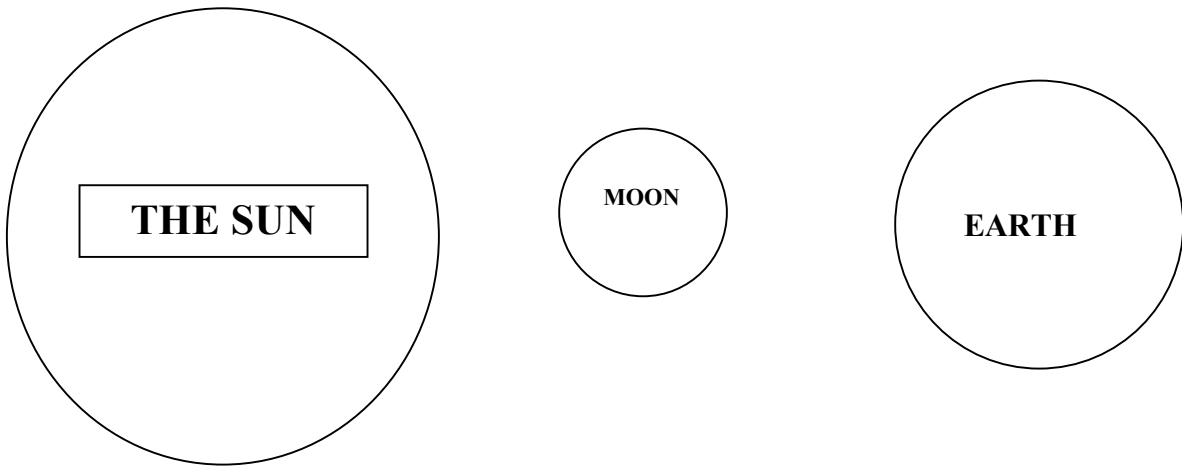
- i. Explain that the moon looks red during totality because of sunlight bending as it passes through the Earth's atmosphere.
- 5) Ask students if they know why we don't see eclipses every month, and allow students to share some of their thoughts. Explain that the moon's orbit is slightly tilted (about  $5^\circ$ ), which causes the Sun, Moon, and Earth to align only occasionally. Show students the Bill Nye video clip showing the moon's tilted orbit, and how it affects eclipses.
- 6) Do a short review of the lesson

Name: \_\_\_\_\_ KEY \_\_\_\_\_  
Teacher: \_\_\_\_\_

Date: \_\_\_\_\_  
Period: \_\_\_\_\_

### Eclipses

**Solar Eclipse:** The \_\_\_ MOON \_\_\_ comes between the Sun and the \_\_\_ EARTH \_\_\_\_\_.  
The \_\_\_ MOON \_\_\_\_\_ casts a shadow on the \_\_\_ EARTH \_\_\_\_\_.  
A solar eclipse can happen during which one of the phases of the Moon?  
\_\_\_\_\_ NEW MOON \_\_\_\_\_



**Lunar Eclipse:** The \_\_\_ EARTH \_\_\_ comes between the Sun and the \_\_\_ MOON \_\_\_\_\_.  
The \_\_\_ EARTH \_\_\_\_\_ casts a shadow on the \_\_\_ MOON \_\_\_\_\_.  
A lunar eclipse can happen during which one of the phases of the Moon?  
\_\_\_\_\_ FULL MOON \_\_\_\_\_

