

2017 Eclipse: Research-Based Teaching Resources

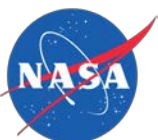
Eclipse Concept Survey

Description: Use this instrument as a pre/post tool to reveal student thinking about describing solar versus lunar eclipses, what is observed during a solar eclipse, how location of the observer affects what is observed, the times of day/night when eclipses can be observed, and the geometry of the Earth, Sun, and Moon during solar eclipses.

Survey Questions: See the following page.

Find more teaching resources at aapt.org/Resources/Eclipse2017

This resource was developed by B. Ambrose, J. Bailey, X. Cid, R. Lopez, R. Vieyra, and S. Willoughby. The co-authors acknowledge the support of a subcontract from the NASA Heliophysics Education Consortium to Temple University and the AAPT under NASA Grant/Cooperative Agreement Number NNX16AR36A.



Assessment: Eclipses

Name _____

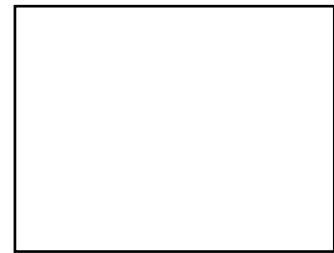
1. You may have heard the terms “solar eclipse” and “lunar eclipse” before. In your own words, give a definition of each of these events.

Solar eclipse:

Lunar eclipse:

2. Imagine that Nadia is a student in Atlanta, GA, who is observing a total solar eclipse (using, of course, proper safety equipment for eye protection).

- A. In the space at right, sketch what you think Nadia would observe in the sky at the time of the total solar eclipse. For instance, sketch how the Sun would appear, and sketch what other celestial objects must be in the sky as well. **Clearly label all objects in your sketch.**



During which of the following times could Nadia be making this observation? Circle **all** that are possible.

Sunrise

Noon

Sunset

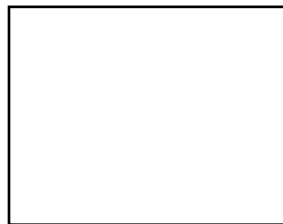
Midnight

What Nadia sees in the sky (Atlanta)

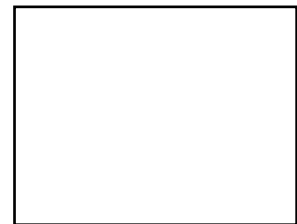
Explain how you know.

- B. Nadia, while observing the solar eclipse in Atlanta, immediately phones friends in Lansing, MI, and Cincinnati, OH. (Note: All three of these cities lie very near a single line running from north to south, with Lansing being northernmost and Atlanta being southernmost.)

As you did above, sketch what you think Nadia's friends in these cities would observe in the sky. **Clearly label all objects in your sketch.**



What the friend in Lansing, MI, sees in the



What the friend in Cincinnati, OH, sees in the

- C. In the space below, in words and with a diagram, explain what causes the total solar eclipse. In your sketch, **clearly label** the *Sun*, *Earth*, and *Moon*.

Assessment: Eclipses

Name _____

3. During another time of year, Bobby, in San Francisco, CA, observes a total lunar eclipse.

A. In the space at right, sketch what you think Bobby would observe in the sky at the time of the total lunar eclipse. For instance, sketch how the Moon would appear, and sketch what other celestial objects must be in the sky as well. **Clearly label all objects in your sketch.**



During which of the following times could Bobby be making this observation? Circle **all** that are possible.

Sunrise

Noon

Sunset

Midnight

What Bobby sees in the sky

Explain how you know.

B. Bobby, while observing the lunar eclipse, immediately phones two friends in Portland, OR, and Seattle, WA. (Note: All three of these cities lie very near a single line running from north to south, with Seattle being northernmost and San Francisco being southernmost.)

As you did in part A, sketch what you think Bobby's friends in these cities would observe in the sky. **Clearly label all objects in your sketch.**



What the friend in Portland, OR, sees in the



What the friend in Seattle, WA, sees in the

C. In the space below, in words and with a diagram, explain what causes the total lunar eclipse. In your sketch, **clearly label** the *Sun*, *Earth*, and *Moon*.

4. Have you ever seen (in person) a solar eclipse? (Y/N)

Have you ever seen (in person) a lunar eclipse? (Y/N)