

Eclipses

When the sun, Earth and moon are in a direct line, we have an eclipse. There are two general types of eclipses. The first is the **lunar eclipse**. The word **eclipse** means to cover up and the word lunar refers to the moon. So, a lunar eclipse means to cover up the moon. The second type of eclipse is the **solar eclipse**. The word solar refers to the sun. So a solar eclipse means to cover up the sun.

Watch the video Spacefiles – *Solar Eclipse*

1. What happens to cause the “diamond ring” effect during a solar eclipse?

2. What is the ring that can be seen around the moon during a total solar eclipse called? _____

Why do people have to wear special glasses or watch the solar eclipse through darkened glass? The Sun emits light from the entire spectrum from radio waves to X-rays and Gamma Rays all the time. If you look at X-rays or Gamma Rays directly it will burn your retina. Most of the time when we try to look at the Sun it is so bright, we have to look away. During a solar eclipse we can look directly at the sun letting in the harmful rays.

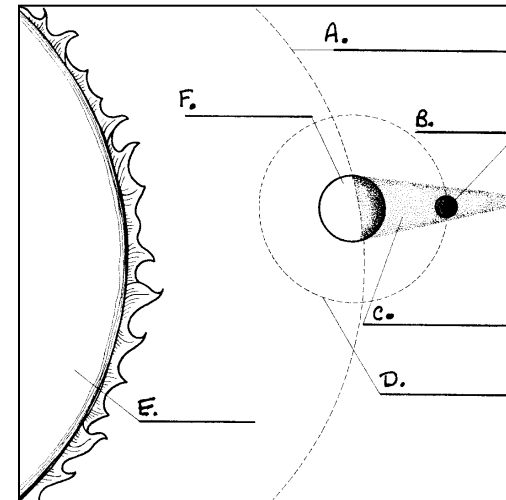
Watch the video *Super-sized Lunar Eclipse*

3. Why does the moon turn red during a Lunar Eclipse?

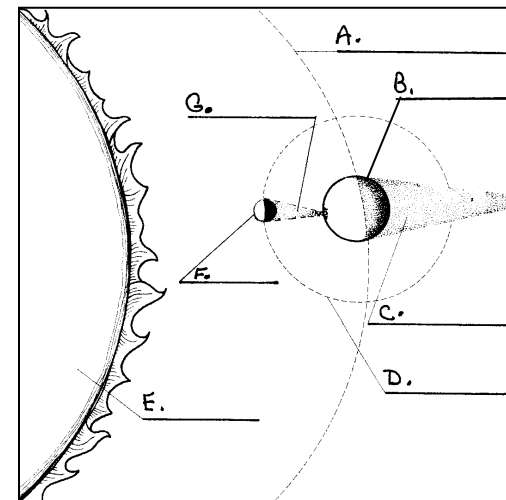
4. What is the moon illusion? _____

What To Do:

Below we have diagrams of both types of eclipses. Label each of the objects and then determine which diagram shows a solar eclipse and which diagram shows a lunar eclipse. Remember to place yourself on the earth not in space.



1. _____ Eclipse



2. _____ Eclipse

Word Bank

Earth's orbit
moon's orbit
moon
Earth
sun
Earth's shadow
moon's shadow

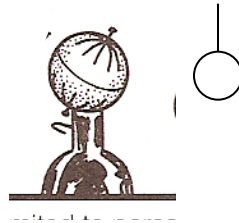
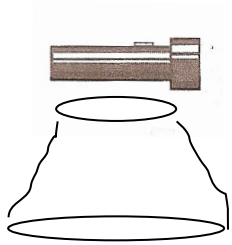
Questions:

1. At which phase of the moon does a lunar eclipse occur?

2. At which phase of the moon does a solar eclipse occur?



Materials: Flashlight taped to a plastic cup, Earth ball, stand, Moon ball

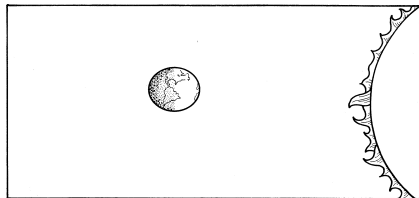


What to Do:

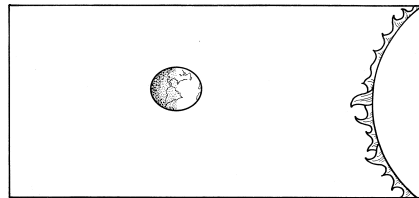
1. Set the Earth ball in the stand making sure the North Pole is pointed up AND the axis is tilted. See picture.
2. Place the flashlight about 18 " in front of the Earth Ball.
3. Turn on the flashlight and turn off the classroom lights.
4. Use the Moon ball to orbit the Earth passing in and out of the Earth's shadow. This is a lunar eclipse.
5. Use the Moon ball to orbit the Earth causing a shadow to fall on the Earth ball from the Moon ball. This is a solar eclipse.
6. Show your teacher the two eclipses.

After using the model shown above, draw the **moon** and the **shadow** that makes the labeled eclipse.

LUNAR ECLIPSE



SOLAR ECLIPSE



Questions:

1. In which type of eclipse is the moon in the earth's shadow? _____
2. In which type of eclipse does the moon cause the shadow? _____
3. How are the two eclipses alike? _____

4. How are the two eclipses different? _____

Conclusion: (eclipse, direct, cover-up, moon, shadow, lunar, sun, solar)

When the Earth, moon and sun are in a _____ line there will be an _____. The word eclipse means to _____ - _____. Lunar refers to the _____ and solar refers to the _____. When the _____ of the moon falls on the Earth it is a _____ eclipse. When the shadow of the Earth falls on the moon it is a _____ eclipse.



Name _____ period _____

EXIT TICKET

Eclipses

1. What type of eclipse is occurring when the moon is in front of the sun?

- A. Solar eclipse
- B. Lunar eclipse

2. What type of eclipse is occurring when the earth is in front of the sun?

- A. Solar eclipse
- B. Lunar eclipse

3. Which type of eclipse covers up the moon?

- A. Solar eclipse
- B. Lunar eclipse

4. Which type of eclipse covers up the sun?

- A. Solar eclipse
- B. Lunar eclipse

5. Which type of eclipse is dangerous to look at without special glasses?

- A. Solar eclipse
- B. Lunar eclipse



Name _____ period _____

EXIT TICKET

Eclipses

1. Which type of eclipse is dangerous to look at without special glasses?

- A. Solar eclipse
- B. Lunar eclipse

2. What type of eclipse is occurring when the earth is in front of the sun?

- A. Solar eclipse
- B. Lunar eclipse

3. Which type of eclipse covers up the sun?

- A. Solar eclipse
- B. Lunar eclipse

4. Which type of eclipse covers up the moon?

- A. Solar eclipse
- B. Lunar eclipse

5. What type of eclipse is occurring when the moon is in front of the sun?

- A. Solar eclipse
- B. Lunar eclipse