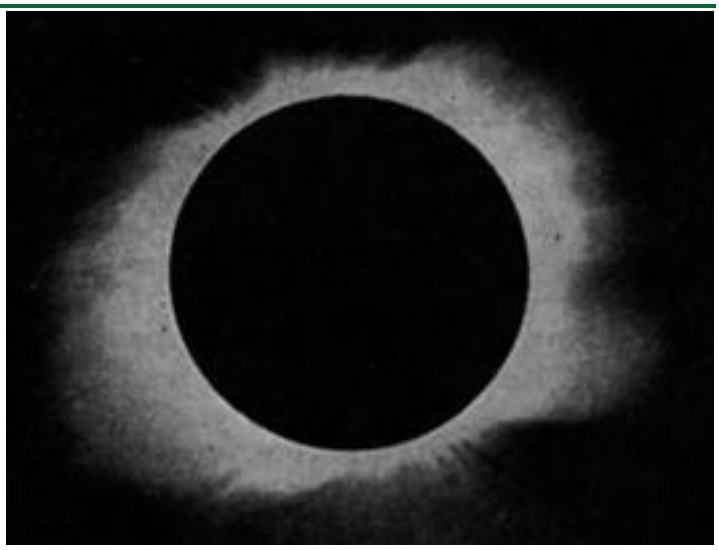
Eclipses

By Patti Hutchison



[1] The sky begins to grow dark, yet it is noon. The sun appears to have a little bite taken out of it. What is going on? You are experiencing a solar eclipse.

[2] The full moon was bright in the night sky. All of a sudden, a corner appears to be carved out of it. A lunar eclipse is about to take place.

[3] Both the sun and the moon experience eclipses. An eclipse happens when the light is blocked. There are both partial and total eclipses. What causes these awesome events?

[4] A solar eclipse occurs when the moon passes directly between the sun and the earth. The moon actually blocks our view of the sun. How can this be, when the sun is much larger than the moon? Remember that the sun is much farther away from the earth than the moon is. This causes them to appear to be about the same size as we look at them in the sky.

[5] As a total solar eclipse takes place, we see less and less of the sun. Soon, the moon totally blocks the disk shape of the sun. We see only the sun's gaseous outer layers. The middle is perfectly black. As the moon continues to move, more of the sun begins to appear. A solar eclipse looks similar to the phases of the moon. But the "phases" happen much quicker!

[6] Only a small portion of the earth will see the total eclipse. This is because the moon casts a shadow on the earth. This shadow has two regions, the umbra and the penumbra.

[7] The umbra is the inner portion of the shadow. It does not receive direct sunlight. People who are watching from the umbra see a total solar eclipse. The penumbra does receive some sunlight. This is a wider area. People watching from the penumbra only see a partial eclipse.

[8] You should never look directly at the sun. The rays can do great damage to your eyes. Therefore, you can't watch an eclipse without special filters for your eyes. There are several ways to watch this awesome event safely, however. There are special glasses you can buy. Sunglasses DO NOT work. You can also make your own pinhole projector or viewer. You can find information about how to protect your eyes from permanent damage online or at the library.

[9] Solar eclipses, especially total ones, happen very rarely. Lunar eclipses happen a little more often. A lunar eclipse occurs when the moon passes through the earth's shadow. This happens only when there is a full moon. The earth is between the moon and the sun, blocking the reflected light. The moon turns dark.

[10] The shadow of the earth also has an umbra and a penumbra. When the whole moon is inside the earth's umbra, a total eclipse occurs. The moon can still be seen, although it has a reddish color. This is caused by the bending of sunlight by the earth's atmosphere.

[11] Eclipses don't happen every month, even though the sun, moon, and earth may be in the right alignment. This is because the orbits pass above or below the perfect positions that would cause an eclipse. The maximum number of eclipses that can be seen in one year is seven. This occurred in 1982, but it won't happen again until 2038!

Name _____ Science Pd _____

Eclipses

1. What positions are the sun, moon, and, earth in during a solar eclipse? _____ _____	2. Why do the sun and moon appear the same size as we see them from earth? (A) The moon is farther from the earth than the sun is. (B) They actually are the same size. (C) The sun is farther from the earth than the moon is.
3. It is never safe to watch a solar eclipse with the naked eye. (A) False (B) True	4. When the moon passes through the earth's shadow, there is: (A) A partial solar eclipse. (B) A lunar eclipse (C) A solar eclipse
5. An eclipse can happen every month. (A) False (B) True	6. What causes the moon to appear red when there is a lunar eclipse? _____ _____