Teacher Notes: Curved

Introduction

Light has many interesting aspects. An example is **reflection**. Reflection occurs when light bounces off a surface. Think about what happens when you look in a mirror. Whether you realize it or not, you are reflecting light. This light travels to the mirror, then bounces back to your eyes. This is how you see your reflection.

The distance that students will be measuring is called the **focal length.** Depending on the level of the students, some may know that lenses have focal lengths, but they may not realize that mirrors do too.

This activity only deals with a concave mirror. You may wish to expand this to include convex mirrors.

In this lab you will compare curved and flat mirrors.

Materials

- A light of your choice (e.g. candle)
- 2 curved mirrors
- a flat mirror
- White paper (8.5X11")
- a Styrofoam cup

Procedure

1. Cut a slit in the Styrofoam cup. It should be large enough to hold a curved mirror.

2. Place one of the curved mirrors in the Styrofoam cup slit.

3. Make an image of the light (e.g. candle flame) with the mirror. Measure the distance from the mirror to the image. Have students construct the data tables in your preferred format.

4. Replace the first mirror with the second curved mirror and repeat the measurement.

5. Place a flat mirror in the cup and record your observation. It need not be exactly vertical.

6. Draw a sketch of how a curved mirror forms an image.

Questions

1. Which mirror produced the larger image?
The two curved mirrors have different focal lengths. The one with the longer focal length produced the larger image.

2. Where might a scientist want to use a curved mirror rather than a flat mirror?
In a telescope. Some other items that use a curved mirror include headlights, flashlights, fun house mirrors, or rearview mirrors. You may also want to discuss the difference between concave and convex mirrors at this point. An item that uses flat mirrors is a bathroom mirrors.

3. Explain how "Fun House" mirrors work.
"Fun House" mirrors work by using different combinations of curved mirrors (both convex and concave) to distort the reflected image into funny shapes.

Conclusion

What can you say about curved mirrors versus flat mirrors? Use evidence from your lab to backup your statement.

Curved mirrors have a focal point where the light is concentrated. Flat mirrors do not have a focal point