



## SOLAR ECLIPSE BOX

### SCIENCE SAFETY

PLEASE follow these safety precautions when doing any science experiment.

- **ALWAYS** have an adult present.
- **ALWAYS** wear the correct safety gear while doing any experiment.
- **NEVER** eat or drink anything while doing any experiment.
- **REMEMBER** experiments may require marbles, small balls, balloons, and other small parts. Those objects could become a **CHOKING HAZARD**. Adults are to perform those experiments using these objects. Any child can choke or suffocate on uninflated or broken balloons. Keep uninflated or broken balloons away from children.

### INGREDIENTS

- Long Cardboard Box
- Scissors
- Tape
- Aluminum Foil
- Thumb Tack
- 8 ½" x 11" White Copy Paper

### INSTRUCTIONS

**STEP 1:** Cut a 4" x 2" rectangular hole in the end of the long cardboard box.

**STEP 2:** Cut out a piece of aluminum foil, slightly larger than the rectangular hole in the end of the box.

**STEP 3:** Tape the aluminum foil over the rectangular hole in the end of the box.

**STEP 4:** Using the thumb tack, create a tiny hole in the center of the aluminum foil.

**STEP 5:** Tape the 8 ½" x 11" piece of white copy paper on the inside of the other end of the box. Close and tape the box.

**STEP 6:** Cut a hole, big enough for your head, in the bottom of the box.

**STEP 7:** Stand with your back to the sun. Place the box over your head, with the aluminum foil towards the sun. Adjust your position until you see a small projection of the eclipsed sun on the paper, inside the box. Using the observations of the sun, moon, and stars to describe how patterns can be predicted. Create an argument that differences in the apparent brightness of the sun, compared to other stars, is due to their relative distance from the Earth.

### EXPLANATION

Your solar eclipse box works like a pinhole camera. A pinhole camera is a simple camera without a lens. Light from the sun travels through the thumb tack hole and projects an inverted image of the eclipse on the piece of white paper, on the opposite side of the box.



### SCIENCE BACKGROUND

The sun and the moon form a system with Earth. Patterns of the motion of the sun, moon, and stars in the sky can be observed, described, and predicted. The sun is a star that appears larger and brighter than other stars because it is closer. Earth revolves or moves around the sun, and at the same time, the moon revolves around Earth. Sometimes when the moon revolves around Earth, it moves between the sun and Earth. When this happens, the moon blocks the light of the sun from reaching Earth. This causes a solar eclipse. A solar eclipse can only take place during a new moon. During a solar eclipse, the moon casts a shadow onto Earth. Only people in a small area on Earth, where the moon's shadow falls, can see a total solar eclipse.

### I CAN STATEMENT

- ✓ I can use observations of the sun, moon, and stars to describe patterns that can be predicted.
- ✓ I can support an argument that differences in the apparent brightness of the sun, compared to other stars, is due to their relative distance from the Earth.

### NEXT GENERATION SCIENCE STANDARDS CONNECTION

1 – Space Systems: Patterns and Cycles

5 – Space Systems: Stars and the Solar System

