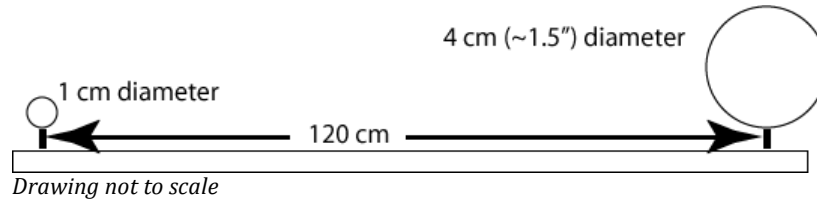


Stick Model of the Earth-Moon System

The relative sizes of the Earth and Moon and their distance from one another is difficult for many students to visualize; this simple device can be used to demonstrate the Earth-Moon system.



Earth diameter	12,742 km	~4 cm
Moon diameter	3,475 km	~1 cm
Earth-Moon distance	384,400 km	~120 cm

In this model, the scale is 1 cm = ~3,200 km. At this scale, the Sun would have a diameter of ~4.4 m (14.4 feet) and the distance between the Earth and the Sun would be nearly half a kilometer.

Materials:

- 1" x 1" x 48" wooden stick (available at a hardware store)
- 1 cm (10 mm) bead or ball (10 mm wooden beads are available on Amazon)
- 4 cm styrofoam ball (1.5 inch balls are easily available)
- wooden skewers
- glue

Instructions:

- Drill two small holes on the stick about 120 cm apart.
- Cut the wooden skewers into ~1.5 inch portions.
- Insert a piece of the skewer into each drilled hole and secure with glue if needed.
- Insert the balls (or beads) onto the ends of the skewers and secure with glue if needed.

The phases of the Moon and the occurrence of lunar and solar eclipses can be demonstrated outdoors on a sunny day. It is very important not to look directly at the Sun during these demonstrations. Alternatively, the light from an overhead projector can be used indoors as a "Sun."

A solar eclipse can be demonstrated by holding the Moon toward the Sun and positioning it so that the shadow of the Moon projects on the Earth. A lunar eclipse can be demonstrated by holding the Earth toward the Sun and positioning the model so that the shadow of the Earth projects on the Moon. Note the Earth's shadow is larger and completely covers the Moon. The fact that eclipses do not occur monthly can be demonstrated by showing that the alignment of the Earth-Moon-Sun can vary by a few degrees so that shadows are not projected on the Earth or Moon.

The phases of the Moon can be demonstrated by orienting the model while the observer is positioned behind the Earth ball. By changing the orientation of the model with respect to the Sun, the lunar phases can be observed on the model Moon.

