

Sun, Earth, Moon > Accessible solar eclipse model

Model Scale 1 inch = 20,000 miles (conversions values are rounded for model)

Body	Diameter (mi)	Model Diameter (in.)	Model Diameter (cm)
Sun	860,000	43	109
Earth	8,000	0.4	1
Moon	2,160	0.1	0.25

- Average distance from Earth to Moon is 240,000 miles (12 inches / 30.5 cm)
- Distance to the Sun is 93,000,000 miles (388 feet (400 feet) or 122 meters)

Hands-on model:

Materials

- 1 12" ruler
- 1 bead 0.4 inches/1 cm
- 1 beach 0.1 inches / 0.25 cm
- 1 43" ball or cut out of the sun
- glue or tape
- 800' of strong colored string or thin rope

To view the geometry and alignment of the Sun, Earth and Moon

- 1) Affix the beads at opposite ends of the ruler to represent the distance between the Earth and Moon at this scale.
- 2) Place the sun model at one location and walk off 388 – 400 feet, mark location with an X or other indicator.
- 3) Standing on or at the 'X' face the sun model. Hold the Earth-Moon model to eye level with the away from you.

To view the penumbra

- 1) Tape or have a student hold both ends of the string on either side of the Sun model.
- 2) Pull the string taught, placing the middle of the string in the center of the Earth bead, to form the Penumbra. (Note, this may require taping the string to the ruler to keep it in place.)
- 3) Have the students walk the distance between the Sun and Earth-Moon.

For Visually Impaired / Blind:

- Use a Braille ruler
- While holding on to the string, have the student walk along the path of the penumbra so that they can get a feel for both the geometric relationship and distance between the Sun and Earth-Moon system.
- Optional – ring a bell or talk with the student so they gain an additional sense of 'space' and the distance between the Earth-Moon and the Sun.
- **Explore the tactile guide to eclipses: Getting a Feel for Eclipses**

Optional

- Mark the distance between the Sun and Mercury and Venus – to provide students with a frame of reference when walking the penumbra
 - Mercury (160 feet from the Sun)
 - Venus (280 feet from the Sun)