

Shadow Tracing Take and Make Kit

Safety Warning: Never look directly at the Sun because it can harm your eyes.

Kit Materials

- ☀ Sidewalk chalk
- ☀ Markers
- ☀ Drawing paper

Explore the Sun's position in the sky by tracing your shadow on the ground with sidewalk chalk, then compare that to shadows cast later in the day! The Sun appears to shift position in the sky as the Earth rotates (the Sun itself is not actually moving). This results in the Sun's rays hitting objects on Earth's surface at different angles throughout the day, changing the appearance of shadows.

Move the activity indoors by using a light source and drawing paper to trace the shadow of a partner's hand.

Instructions



1. On a sunny day, find a safe, clean, large area with a smooth surface outside (such as a patch of sidewalk) with a friend, family member, or caregiver.
2. Choose one person to be a “shadow maker” and another to be a “shadow tracer.”
3. Once the “shadow maker” finds a good spot to stand, the “shadow tracer” needs to draw a box with sidewalk chalk around the “shadow maker’s” shoes so they know where to stand later in the day.
4. The “shadow tracer” now can use sidewalk chalk to trace the “shadow maker’s” shadow. Have fun and strike a silly pose!
5. Switch roles and find a new spot to trace the other person’s shadow.
6. Come back to the same spots later in the day and trace new shadows.

How have the shadows changed? What time of day was your shadow the longest? What time was it the shortest?

Continue Indoors



1. Shine light from a lamp or flashlight onto a piece of drawing paper.
2. Work with a partner to take turns drawing the shadows of your hands or objects held in front of the light.

What happens to the shadow if you move your hand or object farther away from the light source? What happens if you move it closer to the light?

How does this activity relate to a solar eclipse?



A solar eclipse occurs when the new moon passes between the Earth and the Sun. Just as you are using your body or an object to cast a shadow upon the ground or a piece of drawing paper, the moon's shadow is cast upon the Earth during a solar eclipse!

If people are located in the penumbra, which is the partially shaded outer region of the moon's shadow, they will see a partial solar eclipse. **Safety alert: this means they must NEVER look directly at the Sun without protective glasses at any point during the eclipse.**

If people are located in the umbra, which is the fully shaded inner region of the moon's shadow, they will see a total solar eclipse. **Safety alert: during a total solar eclipse, you need eye protection while only part of the Sun is covered by the Moon. During the few minutes of totality, when the Sun is completely covered, you may take off your protective glasses for a short time.**

Above image: Moon's shadow from orbit (actual photo). Credit: Patricia Reiff, Rice University

Right image: space.rice.edu/eclipse

