

## 5. What Can We Learn About The Sun From Shadows?

# Activity

### 1. Prepare for the field trip to explore shadows. Emphasize safety: Never look directly at the Sun.

Make the point (over and over during these activities) that it is never safe to look directly at the Sun.

Explain the objective for the field trip: to find out how shadows change over time.

Establish safety rules for working outdoors. These might include:

- Walk. Stay within eyesight of the leader.
- Do not look directly at the Sun.
- Leave the site exactly as you found it.

### 2. Go outdoors and set up the investigation: How do shadows change over time?

Explain that you will set up the experiment and then leave it in place while you go back indoors to build sundials. Later you will return to find out what happened to the shadow over time.

Take participants to the outdoor site and have them gather around the narrow object (broomstick, yardstick, stake, plunger) which you have selected for the study.

Place a sheet of paper on the ground to catch the shadow. Have a volunteer trace the object's shadow on the sheet of paper. Ask:

- Where is the Sun right now? Without looking at it directly, point to its position in the sky. How do you know that is where the Sun is?

Measure the object and measure the shadow it casts, and note the measurements on the piece of paper. Also record the time. Ask:

- Is the shadow longer or shorter than the object? For participants with the math skills to calculate ratios, you might have them figure out the ratio of shadow length to object height.

