



SUN TRACKING

Daisies | Brownies | Juniors | Cadettes | Seniors | Ambassadors

What Is This About?

Long before humans kept track of time with mechanical clocks, atomic radiation, or computer chips, they used the Sun to tell time. As the Earth spins around like a top, the Sun appears to move across our sky. This movement causes shadows to move and change over the course of a sunny day.

The simplest Sun tracker is called a gnomon, pronounced “no min.” A gnomon casts a shadow, and can be as simple as a vertical pole. It can be used to track time on its own, or to measure time in hours and minutes as part of a sundial.

Materials — (you provide)

- Vertical pole, stick (straight branch, stake, pencil)
- Open location on a sunny day
- Rocks or other markers, 3 or more

To Do —

If you are installing your own stick as a temporary gnomon,

- Find a clear, sunny space with soft dirt
- Press the stick straight down into the ground until it stands up on its own
- Find your gnomon’s shadow and mark the shadow’s end with a rock
- Decide when you can return to your gnomon, at least 30 minutes later
- Estimate where the gnomon’s shadow will be at this future time
- Place a second rock at the location of your guess.
- Groups can make multiple guesses with more rocks
- Return to your gnomon after the planned amount of time

Check your guess. Is the rock close to the shadow? Did the shadow move more, less, or differently than you expected? Based on this movement, where do you hypothesize the shadow might be if you waited the same amount of time again? If you have time, guess again check back a second time. Did the shadow move as you expected?

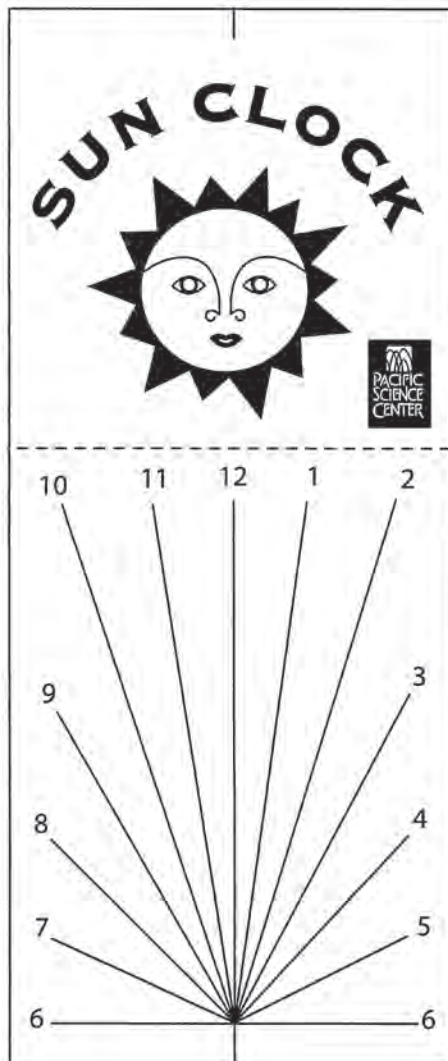
Make a Pocket Sun Clock —

Make a simple Pocket Sun Clock. Pick the pattern for your location, and print on heavy paper or glue onto cardstock. Cut out the Sun Clock, and carefully cut the short notch at each end. Fold along the dotted line, with the print on the inside. Take about 7 inches (20 centimeters) of string, and place the ends through the notches. Tape one end to the back of the clock. Make the string tight when the two parts of the clock are at a 90 degree angle. Tape the second end of the string to the back of the clock.

Take the Pocket Sun Clocks outside on a sunny day. Ask the Girl Scouts to place the clocks on a flat surface and experiment with them until they tell the right time. Which way are the clocks facing? Is there only one correct position? If possible mark the position on the ground, and return about an hour later to experiment again. Any changes?

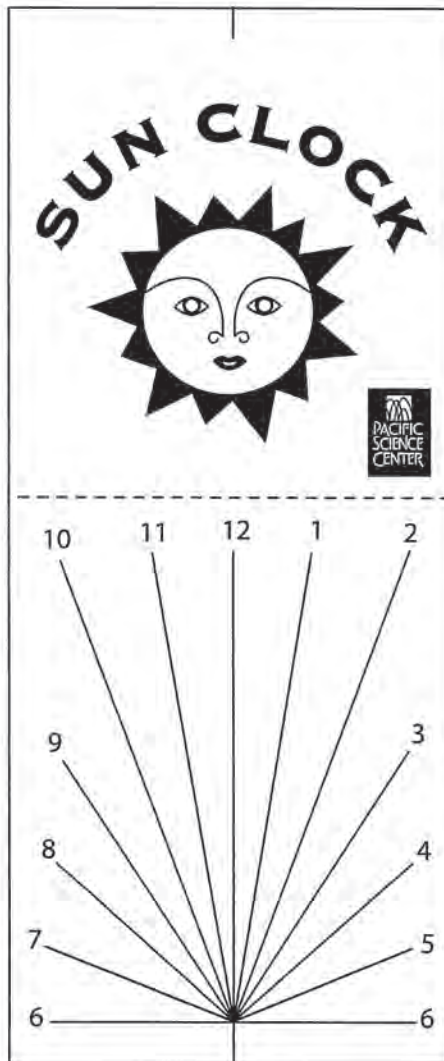


CLOCK 1



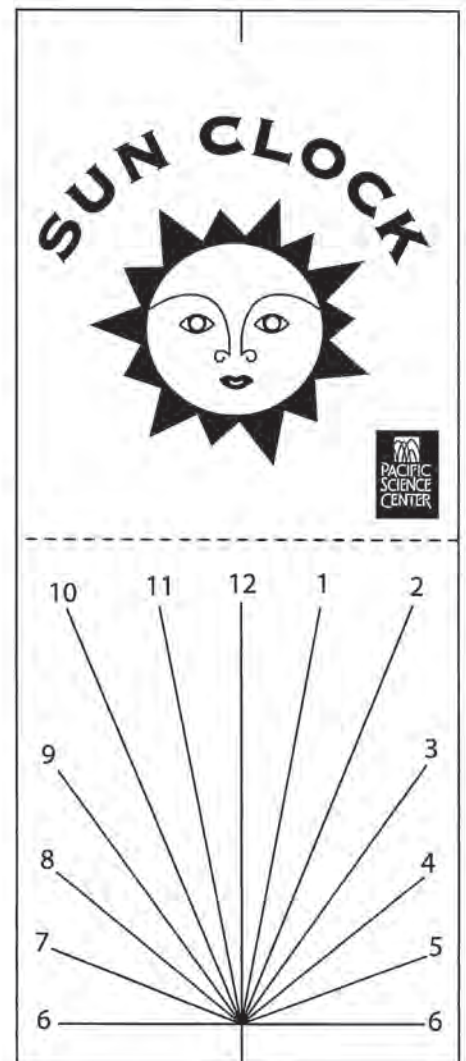
Use this Sun Clock if you live in:
So. CA, So. NV, AZ, NM, A, TX, AL,
LA, TN, MS, AL, GA, FL, NC or SC

CLOCK 2



Use this Sun Clock if you live in:
No. CA, No. NV, UT, CO, So. WY, NE,
KS, IA, MO, IL, IN, OH, KY, VA, WV, MD,
DE, NJ, PA, So. NY, MA, CT, or RI

CLOCK 3



Use this Sun Clock if you live in:
WA, OR, ID, MT, ND, SD, No. WY, MN, WI,
MI, No. NY, VT, NH, ME, So. Canada