

ACTIVITY

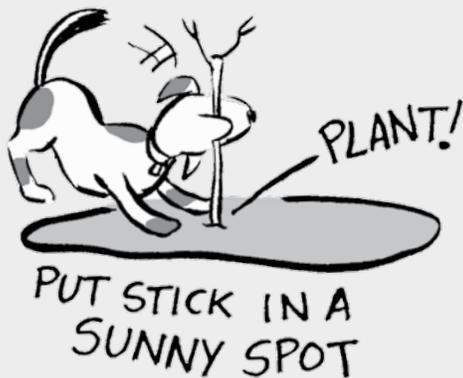
READING SEASONS
FROM A SHADOW

Each day the sun appears to move across the sky from east to west (actually the sun stays in place and the earth spins on its axis). Although the sun may seem to rise and set at the same spot on the horizon each day, the path it takes between those two points varies over the course of the year.

Supplies

- pebbles
- straight stick to push into the ground or flagpole

To learn how the path of the sun changes over the year, you can indirectly observe its changing *arc*. The movement of shadows across the ground shows which season it is.



1 On a sunny day, go out early in the morning and place a pebble at the end of the stick's (or flagpole's) shadow. Every hour or so throughout the day, place another pebble to mark the end of the shadow. Make sure to place a pebble at noon when the shadow is at its shortest.

2 At day's end, what shape does your row of pebbles form? If it's an arc that curves toward the stick, then the season is summer. If the arc curves away from the stick, it's winter. And if the row of pebbles forms a straight line, then it's either spring or autumn. To find out which, create a new line of pebbles one day each week until the line bends either toward or away from the stick.

ACTIVITY!

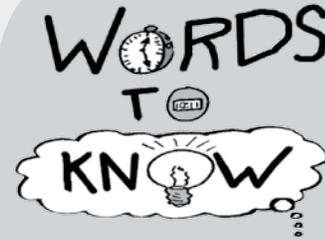
3 This experiment will work in many locations in the **Northern Hemisphere** and **Southern Hemisphere**.

On or near the **equator**, the sun passes directly overhead twice a year, and the sun's shadow will pass right through the stick. In June, the shadow will arc to the south because the sun is north of the equator. In December, the shadow will arc the other way.

4 If you live way up in Alaska you'll have a different kind of surprise come summer. Because of the tilt of the earth's axis, the sun is above the horizon 24 hours a day. The end of the stick's shadow will actually trace out a circle. So make sure you have plenty of pebbles on hand!

Did You Know?

A gnomon (pronounced NO-mon) is an object, like a stick or a pole, that casts a shadow to keep track of the time.



arc: a section of a curve or part of a circle.

Northern Hemisphere: the half of the earth north of the equator.

Southern Hemisphere: the half of the earth south of the equator.

equator: the imaginary line around the middle of the earth halfway between the North and South Poles.

