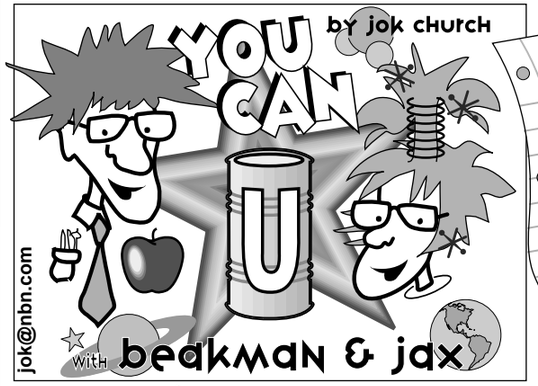
12-21-97 You Can Black & White
Universal Press Syndicate
EMBARGOED Until Release Date



Dear Jax,

How can it get cold when it's sunny out?

Amanda Roach
Gulf Breeze, Florida

Beakman or Jax
P.O. Box 30177
Kansas City, MO 64112
Question, name & address

Dear Amanda,

Light from the sun is not the same thing as heat from the sun. The sun shines a lot of stuff at the Earth – light, ultraviolet radiation, even radio waves. And, of course, lots of heat.

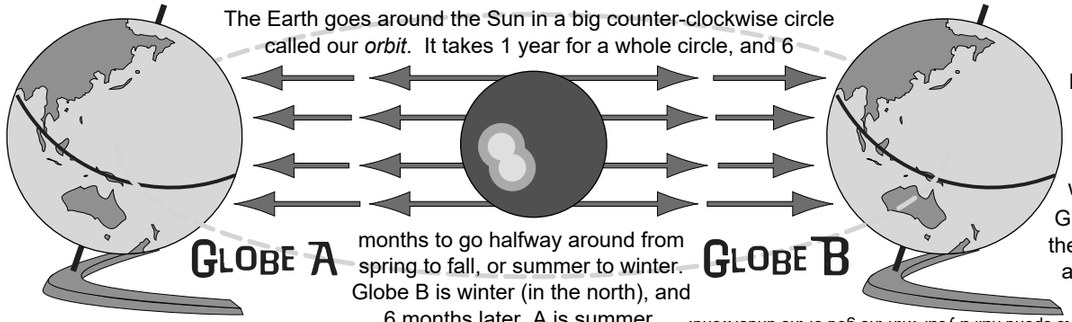
This week begins winter in the Northern Hemisphere. It gets cold this time of year because the sun's radiant heat is spread out over a much larger area.

The radiant heat is the same; it just has to heat a bigger area. The different areas happen because the Earth is tilted on its axis.

Jax Place

Jax Place

The Earth goes around the Sun in a big counter-clockwise circle called our *orbit*. It takes 1 year for a whole circle, and 6 months to go halfway around from spring to fall, or summer to winter. Globe B is winter (in the north), and 6 months later, A is summer.

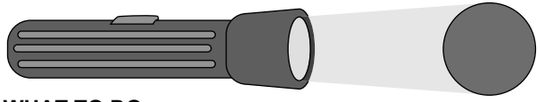


Look at globe A. Most of the sun's heat (arrows) is above the equator. Only 1 of the heat arrows is below the equator. That makes it summer above the equator and winter below it.

Globe B has most of the sun's heat aimed at the Southern Hemisphere, where it is summer, and winter's cold is in the Northern Hemisphere, where Amanda lives.

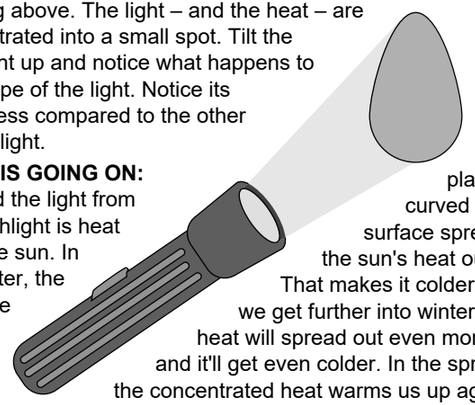
experiment #1

WHAT YOU NEED:
Flashlight - dark room or closet



WHAT TO DO:
Shine your flashlight directly at the wall like the drawing above. The light – and the heat – are concentrated into a small spot. Tilt the flashlight up and notice what happens to the shape of the light. Notice its brightness compared to the other spot of light.

WHAT IS GOING ON:
Pretend the light from the flashlight is heat from the sun. In the winter, the tilt of the Earth and the planet's curved surface spread the sun's heat out. That makes it colder. As we get further into winter, the heat will spread out even more and it'll get even colder. In the spring, the concentrated heat warms us up again.



P.S. from Beakman: The ancient Greeks explained winter as the time of year when a maiden (who represented summer's warmth) went underground to spend half a year with the god of the underworld.