

## Angles of Sunlight

You have seen that seasons change as sunlight shifts between hemispheres during the year. On the ground, you notice the effects of seasons because the angle of sunlight and the length of daylight change over the year. The effects are greatest at locations far from the equator. You may have noticed that sunshine seems barely warm just before sunset, when the Sun is low in the sky. At noon the sunshine seems much hotter. The angle of light affects the temperature.

When the Sun is high in the sky, sunlight strikes the ground at close to a right angle. The energy of sunlight is concentrated. Shadows are short. You may get a sunburn quickly when the Sun is at a high angle. When the Sun is low in the sky, sunlight strikes the ground at a slant. The light is spread over a greater area, so it is less concentrated and produces long shadows. Slanted light warms the ground less.

Near the equator, the noonday Sun is almost overhead every day, so the ground is warmed strongly year-round. In the middle latitudes, the noon Sun is high in the sky only during part of the year. In winter the noon Sun is low and warms the ground less strongly.



**CHECK YOUR READING**

How are temperatures throughout the year affected by the angles of sunlight?

### Sun Height and Shadows

Winter Solstice, 12 P.M.



Winter shadows are long because sunlight is spread out. The Sun appears low in the sky even at noon.

location on Earth



Spring Equinox, 12 P.M.



Spring and fall shadows are of medium length, and the noon Sun appears higher in the sky.



Summer Solstice, 12 P.M.



Summer shadows are short because the light is concentrated in a small area. The noon Sun appears high in the sky.

