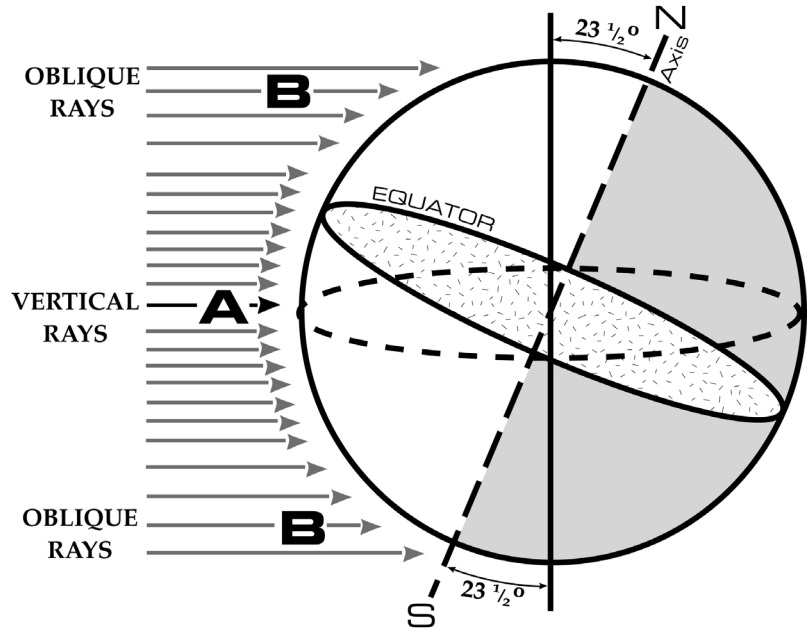


Earth and Sun
Gr. 6-up - Developing Globe Skills

The rays from the Sun supply most of the heat on the Earth's surface. Some places receive more heat than other places. Some places receive so little heat from the Sun that ice covers them the entire year.

Due to the curved surface of the Earth, some places receive more direct Sunrays than others. The direct Sunrays focus heat on an area. Less heat occurs where the rays are less direct. The drawing to the right shows how the more direct rays occur near the Equator. Direct rays are also called vertical rays. The term vertical describes rays that are coming from directly overhead. Because the Earth is round, not all of the Sun's rays strike the Earth in a vertical, or direct, manner. These less direct rays are called oblique rays. Oblique rays are spread out when they strike the Earth, and because of this they lose some of their heat. The picture shows that the arrows representing oblique rays are farther apart as they reach the North and South Pole.



1. The Polar Axis is shown at a $23\frac{1}{2}$ -degree inclination. What other Earth line is shown at $23\frac{1}{2}$ degrees from level? _____
2. Which pole is receiving the most Sun's rays? North _____ or South _____
3. The Sun's rays strike the Earth more obliquely at A _____ or B _____

Latitude	Sun
Equator, 0 degrees	100%
10 degrees latitude	100.5%
20 degrees latitude	98%
30 degrees latitude	92%
40 degrees latitude	82%
50 degrees latitude	67%
60 degrees latitude	59%
70 degrees latitude	49%
80 degrees latitude	41%
90 degrees latitude	37%

The purpose of the table to the left is to show the amount of the Sun's heat measured at various degrees of latitude. The table assumes that the Equator is receiving 100% of the Sun's heat.

The tables show that the Sun's rays create more heat in the low latitude zones and less heat in the high latitude zones.

10° latitude shows more heat than the amount at the Equator due to drier air at this latitude. Dry air and fewer clouds allow more Sun's rays to reach the Earth's surface at this latitude.

90° latitude is the location of the pole. This area received just a little more than one-third ($1/3$) of the heat that occurs at the Equator.

On your globe find the location where the International Date Line (180° E/W) and the Equator intersect. Find the numbers marking the degrees of latitude north and south from the Equator. On the west side of the International Date Line, write the percent of heat received at every 10°, north and south from the Equator to the North Pole.

Hot or Cold?

Use the globe and the research you have already done to answer these questions.

1. Arrange these places in order from the warmest to the coolest. Place 1 in front of the warmest location. Place 2 in front of the location that is warmer than the others but cooler than one. Complete this ranking until you put the number 8 by the coolest location.

_____ Tokyo, Japan

_____ Portland, Oregon

_____ Lagos, Nigeria

_____ Point Barrow, Alaska

_____ Helsinki, Finland

_____ Mexico City, Mexico

_____ Pretoria, South Africa

_____ Dublin, Ireland

2. Which of the following has the coolest temperatures?

_____ Low latitudes _____ Middle latitudes _____ High latitudes