Name: _____ Date: _____

Why Do We Have Seasons?

Reading level 9 (5th grade) · 524 words

Why do we have seasons? You might guess that in summer, Earth swings close to the Sun, and that in winter it drifts far away. That is why summer is hot and winter is cold, right? It is a good guess, and it sounds right. But it is wrong, and the calendar itself can prove it.

Earth is closest to the Sun in January. It is farthest from the Sun in July. If distance made the seasons, July would be the coldest month in the north. Instead, July is the middle of summer there, and January is deep winter, even though we are as close to the Sun as we ever get.

So what does make the seasons? A tilt. Earth spins around an invisible line that runs through the North Pole and the South Pole, and that line is called its axis. But the axis does not stand straight up. It leans over by about 23.5 degrees, like a spinning top that has tipped to one side.

Hold a pencil leaning. Walk it around a lamp. The lean never changes, but the top half faces the lamp for half the trip. Earth does the same around the Sun. The direction and the angle of the axis stay the same all year long. Half a year later, on the far side of the Sun, that same half leans away from it.

In June, the Northern Hemisphere leans toward the Sun. Its sunlight arrives more directly, and its days grow longer. More direct light and more hours of daylight add up to more warmth, and that is summer. The two always work together, like a team. Winter is the same story turned around, with slanted light and short days.

You can see why direct light matters with a flashlight. In a dark room, shine the flashlight straight at a wall, and you get a small, bright circle. Now tilt the flashlight. The same light spreads into a long, dim oval. Light that arrives at a slant is spread over more ground, so each patch of ground gets a little less.

At the very same time, the Southern Hemisphere is leaning away from the Sun. Its days are shorter, and its sunlight comes in at more of a slant. So the seasons are opposite in the two halves of Earth. When it is summer in the north, it is winter in the south, and half a year later it is the other way around.

Twice a year, in March and September, neither half of Earth leans toward the Sun. Both halves get nearly equal sunlight, and day and night are nearly equal in length. Those two days are called equinoxes. Spring and fall are the in-between seasons, when the lean is swinging from one side toward the other.

The tilt does the work, not the distance. Earth is closest to the Sun in January, yet that is winter in the north. Earth's axis stays tilted about 23.5 degrees all year, and the north leans

toward the Sun for half of the trip. So when it is summer in Australia, what season is it where you live?

Questions

1. When is Earth closest to the Sun?

A. June
B. January
C. April

2. About how far is Earth's axis tilted?

A. 23.5 degrees
B. 90 degrees
C. 5 degrees

3. Why is it winter in the south when it is summer in the north?

A. The south is closer to the Sun
B. The south leans away from the Sun
C. The south has no Sun

4. What is the axis in this book?

A. A kind of tree
B. An invisible line Earth spins around
C. A path around the Sun

5. What happens on an equinox?

A. Day and night are nearly equal
B. The Sun does not rise
C. Earth stops spinning

Words to know

axis: spinning line
tilt: lean
hemisphere: half of Earth
slant: at an angle
equinox: equal day

Answer key: Why Do We Have Seasons?

1. B. January
2. A. 23.5 degrees
3. B. The south leans away from the Sun
4. B. An invisible line Earth spins around
5. A. Day and night are nearly equal