Morning Sunshine!

by ReadWorks

Rise and shine! It's morning, and the sun is rising. When we watch sunrises and sunsets, we may just think of the pretty colors in the sky. But sunrises and sunsets can tell us a lot about Earth and the different seasons.

When we watch the sun go up or down in the sky, we are actually seeing how the earth is rotating. We can't feel the earth turning, because everything is moving with us. When a specific part of the earth's surface faces the sun, the sky is bright for the day until that part of the earth's surface turns away from the sun at night.

Our planet is always spinning around its axis. The axis is the invisible line through the center of the earth around which the planet turns. Imagine spinning a basketball on your finger. Now, imagine a line going from the tip of your finger, where it touches the basketball, straight through the center of the ball. That line would be the ball's axis.

While the earth spins around its axis, it also moves around the sun in an ellipse, or an oval. It takes 365 ¼ days for the earth to complete one revolution around the sun. That's how we

measure one year. Mars takes 687 days to make one revolution around the sun; therefore, a year on Mars is longer than a year on Earth.

The earth's axis is not straight up and down, but instead leans towards one side. This axial tilt causes our seasons, where one half of the planet gets more direct sunlight than the other half. As the earth revolves around the sun, the earth's axis tilts toward the sun when it is summer in the Northern Hemisphere. It tilts away from the sun when it is winter in the Northern Hemisphere. North America is in the Northern Hemisphere (the top half of Earth), which leans away from the sun during December and January. When the top half of the earth leans away from the sun, the lower half of the earth leans towards the sun. The sun shines directly on the hemisphere leaning towards it and indirectly on the hemisphere leaning away from it. This is why when it is winter in North America it is summer in lower parts of the world, like Australia. Isn't that interesting?

Every day, the time of sunrise and sunset changes. This is also because of Earth's axis. In the winter, you can see how the days are shorter. The sun doesn't stay in the sky for very long. The shortest day of the year is called the winter solstice. This happens around December 21 in the Northern Hemisphere. In the summer, it's the opposite-the days are longer. The longest day of the year is called the summer solstice. This happens around June 21 in the Northern Hemisphere.

So, we can guess when our seasons will start. When the days are getting shorter, we know that winter is coming. When the days are getting longer, we know that summer is on its way! From observing and determining the patterns we find in sunrises and sunsets, we can predict the seasons in the future.

Name: _____ **Date:** _____

1. What is the axis of a planet?

A. the amount of time it takes the planet to make one rotation around the sun

B. the invisible line through the planet's center, around which the planet turns

C. the part of the earth's surface that faces the sun during the day

D. the line that divides the earth into northern and southern hemispheres

2. The cause of the sun rising and setting in the sky is the earth's rotation. What is the effect?

A. The sky gets bright during the day and dark at night.

B. The earth experiences different seasons.

C. It takes the earth 365 ¼ days to rotate around the sun.

D. The earth is colder when the sun is setting.

3. The amount of direct sunlight a hemisphere receives determines the season of that hemisphere. What evidence from the passage supports this conclusion?

A. "The earth's axis is not straight up and down, but instead leans towards one side."

B. "When the top half of the earth leans away from the sun, the lower half of the earth leans towards the sun."

C. "This axial tilt causes our seasons, where one half of the planet gets more direct sunlight than the other half."

D. "North America is in the Northern Hemisphere (the top half of Earth), which leans away from the sun during December and January."

4. Based on the passage, what can be concluded about Mars's distance from the sun?

A. Mars is closer to the sun than Earth is.

B. Mars's distance from the sun changes constantly.

C. Mars and Earth are the same distance away from the sun.

D. Mars is farther away from the sun than Earth is.

5. What is this passage mostly about?

A. the effects of the earth's rotation around its axis

B. why the seasons in the Northern and Southern Hemispheres are opposite

C. how the rotation of the earth around its axis causes day and night

D. why the earth's axis is tilted to one side instead of straight up and down

6. Read the following sentences: "While the earth spins around its axis, it also moves around the sun in an ellipse, or an oval. It takes 365 ¼ days for the earth to complete one **revolution** around the sun."

As used in the passage, what does the word "**revolution**" mean?

A. the act of moving in a random direction

B. the central line around which a planet turns

C. a complete turn around a central point

D. a regular, up-and-down motion

7. Choose the answer that best completes the sentence below.

The earth is constantly spinning; _____, we cannot feel the motion because everything is moving with us.

A. meanwhile

B. however

C. finally

D. for example

8. How can we predict the seasons?

9. Explain what causes the seasons.

10. Explain why the seasons are opposite in the Northern and Southern Hemispheres.