Sunrise, Sunset…or Not?

The sun is a wonderful thing for Earth. It is a star that heats the planet and makes life on Earth possible. In addition, its light shines onto the planet. It is Earth's ultimate source of energy.

Summer days may be longer than winter days, but for most people, the sun seems to do the same thing each day: it appears to come up in the east for the day, and it appears to go down in the west for the night. The sun looks like it rises in the east and sets in the west because of how the earth spins in space. It spins toward the east, or counterclockwise. This means that when most people look at the sky in the morning, the sun will first appear in the east.

The earth takes 24 hours to complete one turn. For most places on Earth, there is a daytime and nighttime every 24 hours. But in some places for many days at a time, the sun might stay up in the sky, or it might not even come up above the horizon.

In some parts of the world, the sun can be up in the sky for months. During part of the spring and summer in Earth's Northern Hemisphere, the Northern Hemisphere is tilted towards the sun so much that the sun in northern Alaska, which is located in the Arctic Circle, never goes below the horizon. The Arctic Circle is an area at the top of the earth. In Barrow, Alaska, the sun doesn't set for almost three months! This phenomenon is called the midnight sun, when the sun has not set at midnight. Try sleeping through that!

During parts of the fall and winter in Earth's Northern Hemisphere, the Northern Hemisphere is tilted in such a way that the sun doesn't come over the horizon in northern Alaska for a little

over two months. Therefore, nights last more than 24 hours. This phenomenon is called the polar night. Although the sun never rises above the horizon during parts of the fall and winter in the Arctic Circle, enough light often shines so that people who live there don't need flashlights to walk around outside.

It may be hard for many people to get through these times of very little or prolonged sunlight. But arctic plants and wildlife have adapted to these seasons of long days and long nights. In the arctic winter, some animals hibernate, and others travel south to where there is more sunlight.

In the arctic summer, there are pools of still water from melted ice, and the 24-hour sunlight warms the Arctic Circle. These conditions are favorable for mosquitoes, which lay their eggs on the surface of water, to thrive. The birds that eat these insects now have plenty of food in the arctic summer. For animals like caribou that mainly eat plants, they can easily find food during the long days of summer.

Most animals, including humans, are used to a period of sunlight and a period of no sunlight every 24 hours. In places where there are months when the sun continuously stays above the horizon or below the horizon, living things have had to adapt to survive.

Name: _____ Date: _____

1. What is the sun?

A a planet that can only be seen from northern Alaska
B an asteroid that shines light onto the earth
C a star that can only be seen from northern Alaska
D a star that shines light onto the earth

2. The midnight sun in northern Alaska is an effect described in the passage. What is its cause?

A animals moving south in the winter
B getting a sunburn in the winter
C the Northern Hemisphere tilting away from the sun
D the Northern Hemisphere tilting toward the sun

3. Read the following sentences: "During part of the spring and summer in Earth's Northern Hemisphere, the Northern Hemisphere is tilted towards the sun so much that the sun in northern Alaska, which is located in the Arctic Circle, never goes below the horizon. . . . During parts of the fall and winter in Earth's Northern Hemisphere, the Northern Hemisphere is tilted in such a way that the sun doesn't come over the horizon in northern Alaska for a little over two months."

What conclusion about the impact of the tilt of the earth does this information support?

A The tilt of the earth has no impact on the amount of sunlight different parts of the earth receive.
B The tilt of the earth has an impact on how fast the earth moves around the sun.
C The tilt of the earth has an impact on the amount of sunlight different parts of the earth receive.
D The tilt of the earth has an impact on how fast the Earth rotates on its axis.

4. Based on the text, how does the Northern Hemisphere tilt during the Northern Hemisphere's winter months?

A away from the sun
B towards the sun
C away from the moon
D towards the moon

5. What is this passage mostly about?

A the town of Barrow, Alaska, and what people there do in the arctic summer
B sunrise, sunset, midnight sun, and polar night
C mosquitos, caribou, and adult birds
D how living things have adapted to survive the arctic summer and winter

6. Read the following sentences: "During some of the spring and summer in Earth's Northern Hemisphere, the Northern Hemisphere is tilted towards the sun so much that the sun in northern Alaska, which is located in the Arctic Circle, never goes below the horizon. In Barrow, Alaska, the sun doesn't set for almost three months! This **phenomenon** is called the midnight sun, when the sun has not set at midnight."

What does the word "**phenomenon**" mean above?

A large body of water
B event or occurrence
C big problem or disaster
D the study of stars, planets, and space

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

The midnight sun is when the sun never sets; _____, the polar night is when the sun never rises.

A for instance
B most importantly
C in contrast
D in the end

8. How does the Northern Hemisphere of the earth tilt when northern Alaska is experiencing the midnight sun?

_____

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9. How does the Northern Hemisphere of the earth tilt when northern Alaska is experiencing the polar night? Use information from the text to support your answer.

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10. How does the earth's tilt affect the earth? Use information from the text to support your answer.

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Teacher Guide & Answers

Passage Reading Level: Lexile 1030

1. What is the sun?

- **A** a planet that can only be seen from northern Alaska
- **B** an asteroid that shines light onto the earth
- **C** a star that can only be seen from northern Alaska
- **D** **a star that shines light onto the earth**

2. The midnight sun in northern Alaska is an effect described in the passage. What is its cause?

- **A** animals moving south in the winter
- **B** getting a sunburn in the winter
- **C** the Northern Hemisphere tilting away from the sun
- **D** **the Northern Hemisphere tilting toward the sun**

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What conclusion about the impact of the tilt of the earth does this information support?

- **A** The tilt of the earth has no impact on the amount of sunlight different parts of the earth receive.
- **B** The tilt of the earth has an impact on how fast the earth moves around the sun.
- **C** **The tilt of the earth has an impact on the amount of sunlight different parts of the earth receive.**
- **D** The tilt of the earth has an impact on how fast the Earth rotates on its axis.

4. Based on the text, how does the Northern Hemisphere tilt during the Northern Hemisphere's winter months?

- **A** **away from the sun**
- **B** towards the sun
- **C** away from the moon
- **D** towards the moon

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- **B** **sunrise, sunset, midnight sun, and polar night**
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- **D** how living things have adapted to survive the arctic summer and winter

6. Read the following sentences: "During some of the spring and summer in Earth's Northern Hemisphere, the Northern Hemisphere is tilted towards the sun so much that the sun in northern Alaska, which is located in the Arctic Circle, never goes below the horizon. In Barrow, Alaska, the sun doesn't set for almost three months! This **phenomenon** is called the midnight sun, when the sun has not set at midnight."

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B most importantly
C **in contrast**
D in the end

8. How does the Northern Hemisphere of the earth tilt when northern Alaska is experiencing the midnight sun?

Suggested answer: The Northern Hemisphere is tilted towards the sun.

9. How does the Northern Hemisphere of the earth tilt when northern Alaska is experiencing the polar night? Use information from the text to support your answer.

Suggested answer: The Northern Hemisphere is tilted away from the sun. The text states "the Northern Hemisphere is tilted in such a way that the sun doesn't come over the horizon in northern Alaska for a little over two months." Furthermore, the Northern Hemisphere is tilted *towards* the sun when northern Alaska is experiencing the midnight sun, so the opposite is most likely the case when northern Alaska is experiencing the polar night. Based on these two pieces of information, students can conclude that the Northern Hemisphere is tilted away from the sun when Northern Alaska is experiencing the polar night.

10. How does the earth's tilt affect the earth? Use information from the text to support your answer.

Suggested answer: Answers may vary and should be supported by the text. Students should generally explain that the earth's tilt affects how much sunlight a hemisphere receives, impacting its people and wildlife.