

grades 4-6



# Paired Texts

BONUS

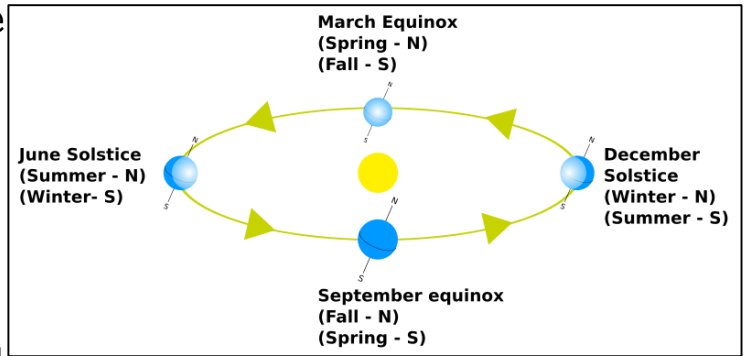
**EARTH'S REVOLUTION  
-AND-  
EARTH'S ROTATION**



# Earth's Revolution

Have you ever noticed that your classroom globe is tilted? This is no accident. Globes are made to be replicas, or models, of the Earth. Earth tilts on its axis<sup>1</sup> toward the sun at 23.5 degrees. This tilt is why we have seasons. If the Earth's axis was straight up and down with no tilt, the temperature would never change. The Earth's tilt, combined with its revolution around the Sun, causes summer, fall, winter, and spring.

The Earth revolves around the Sun in an elliptical, or oval, orbit<sup>2</sup>. When the North Pole is tilted toward the Sun, the Northern Hemisphere has summer while the Southern Hemisphere has winter. About six months later, when the North Pole is tilted away



From the Sun, the Southern Hemisphere has summer while the Northern Hemisphere has winter.

It takes Earth 365.242 days to make a complete revolution around the Sun (or 365 and about one quarter days). This is what we call the solar year. Our modern calendar only has 365 days EXCEPT every four years, we add another day to February. These years are called leap years. 2016 is a leap year, and the next will be 2020. But wait, 0.242 is not an exact quarter of a day. Over the course of many years, those thousandths of a day can add up! Luckily, Pope Gregory XIII fixed this glitch in 1582 by establishing the Gregorian calendar, which is what we still follow today. If we didn't follow the Gregorian calendar, every 128 years, we would be ahead of the solar year by one day. So how was the problem fixed? Leap years occur every 4 years except in years ending with two zeroes that aren't divisible by 400. The year 1896 was a leap year, but the year 1900 was not. This helped our calendar catch up to the solar year.

<sup>1</sup>axis: imaginary line on which something spins

<sup>2</sup>orbit: the curved path around a star, planet, or moon

# The Earth Spins

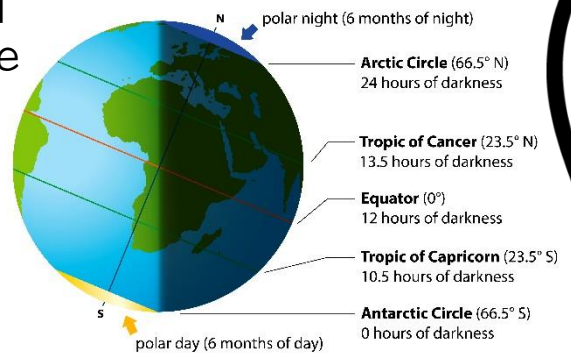
It is easy to mix up the terms "rotate" and "revolve," but the two are very different. Revolving means to go around. The Earth revolves around the Sun, creating our seasons. Rotating means to spin. The Earth rotates on its axis, creating day and night. When our side of the Earth is facing the sun, we are experiencing day. When the Earth rotates away from the Sun, we experience night. It takes about 24 hours for the Earth to make one full rotation. We can't feel the Earth spinning, although sometimes it feels like we can when we look up at the sky and watch the clouds.

Earth rotates counter-clockwise. This rotation is why the Sun appears to rise in the east and set in the west. Also, because the Earth rotates and revolves at the same time, the Sun is in a different place in the sky during the seasons. In the summer, the Sun is high over our heads, while in the winter, the sun seems to be lower in the sky. But, the Sun is not actually moving in the sky.

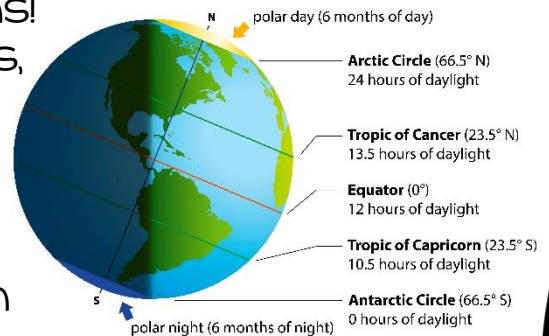
The Earth's tilt and revolution affect the length of our days and nights. In the summer, when we are tilted toward the Sun, our days are longer than our nights. But in the winter, when we are tilted away from the sun, our nights are longer than our days. Unless you live along the equator, you will not have 12 hours of day and 12 hours of night.

There are some places on Earth that have day and night for six months! In the summer and winter at the poles, there is polar night and polar day, also called midnight sun. At the North Pole, from early October until early March, there is no sunlight. During this same time at the South Pole, the sun never sets!

**winter solstice** (December 21)



**summer solstice** (June 21)





Use both texts to answer the following questions.

<p>1. According to <b>The Earth Spins</b>, why does it seem that the Sun is rising and setting in the sky?</p> <ol style="list-style-type: none"> <li>The clouds are moving.</li> <li>The Earth is rotating.</li> <li>The Earth is revolving.</li> <li>The Earth is tilted.</li> </ol>	<p>2. In paragraph 3 of <b>Earth's Revolution</b>, what does the word <b>modern</b> mean?</p> <ol style="list-style-type: none"> <li>current</li> <li>outdated</li> <li>old-fashioned</li> <li>ancient</li> </ol>
<p>3. What happens in a leap year?</p> <ol style="list-style-type: none"> <li>Every four years, people skip a day on the calendar.</li> <li>Every 400 years, we add a day to the calendar.</li> <li>Every four years, people have no sunlight for six months.</li> <li>Every four years, we add a day to the calendar.</li> </ol>	<p>4. The Northern Hemisphere has summer when...</p> <ol style="list-style-type: none"> <li>the North Pole is tilted toward the Sun.</li> <li>the South Pole is tilted away from the Sun.</li> <li>the Southern Hemisphere has winter.</li> <li>all of the above</li> </ol>
<p>5. Which of the following statements is <b>NOT</b> true?</p> <ol style="list-style-type: none"> <li>There are parts of the Earth that have extended daylight.</li> <li>The Earth revolves to create day and night.</li> <li>We have seasons because the Earth revolves.</li> <li>The Sun is higher in the sky and days are longer in the summer.</li> </ol>	<p>6. According to <b>The Earth Spins</b> which shows an effect of the Earth revolving?</p> <ol style="list-style-type: none"> <li>There are 24 hours in a day.</li> <li>Our nights are longer in the winter.</li> <li>We have day and night.</li> <li>Half of the Earth is in complete darkness in the winter.</li> </ol>
<p>7. What information can you learn from the diagrams in <b>The Earth Spins</b>?</p> <ol style="list-style-type: none"> <li>December at the South Pole brings total darkness.</li> <li>The summer solstice begins in December.</li> <li>The North Pole has 6 months of darkness in the winter.</li> <li>June at the North Pole brings total darkness.</li> </ol>	

Name:..... Date:.....

Support your answer to the question with evidence from both texts.

How does the Earth's tilt affect you?

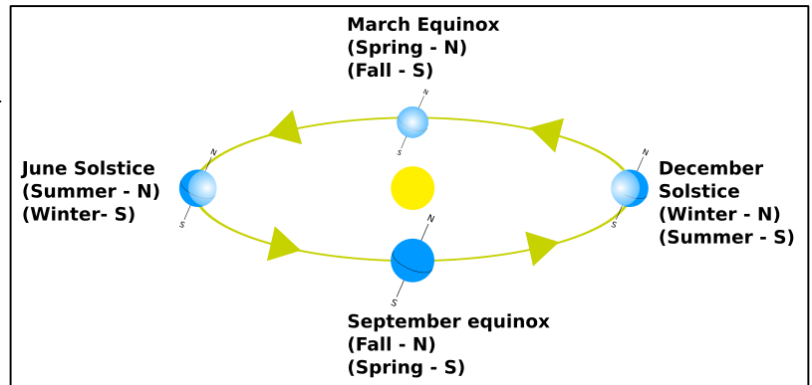


Lined writing area consisting of 20 horizontal lines for providing an answer to the question.

# Earth's Revolution

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Hemisphere has summer while the Northern Hemisphere has winter.

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# The Earth Spins

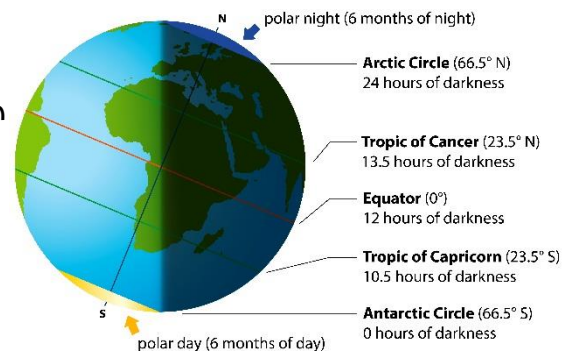
It is easy to mix up the terms "rotate" and "revolve," but the two are very different. Revolving means to go around. The Earth revolves around the Sun, creating our seasons. Rotating means to spin. The Earth rotates on its axis, creating day and night. When our side of the Earth is facing the sun, we are experiencing day. When the Earth rotates away from the Sun, we experience night. It takes about 24 hours for the Earth to make one full rotation. We can't feel the Earth spinning, although sometimes it feels like we can when we look up at the sky and watch the clouds.

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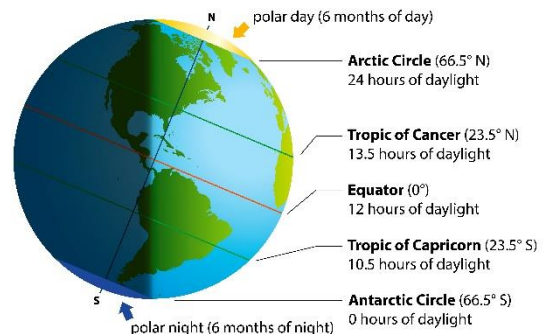
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There are some places on Earth that have day and night for six months! In the summer and winter at the poles, there is polar night and polar day, also called midnight sun. At the North Pole, from early October until early March, there is no sunlight. During this same time at the South Pole, the sun never sets!

## winter solstice (December 21)



## summer solstice (June 21)



Name: \_\_\_\_\_ Date: \_\_\_\_\_

Use both texts to answer the following questions.

1. According to **The Earth Spins**, why does it seem that the Sun is rising and setting in the sky?

- a. The clouds are moving.
- b. The Earth is rotating.
- c. The Earth is revolving.
- d. The Earth is tilted.

2. In paragraph 3 of **Earth's Revolution**, what does the word **modern** mean?

- a. current
- b. outdated
- c. old-fashioned
- d. ancient

3. What happens in a leap year?

- a. Every four years, people skip a day on the calendar.
- b. Every 400 years, we add a day to the calendar.
- c. Every four years, people have no sunlight for six months.
- d. Every four years, we add a day to the calendar.

4. The Northern Hemisphere has summer when...

- a. the North Pole is tilted toward the Sun.
- b. the South Pole is tilted away from the Sun.
- c. the Southern Hemisphere has winter.
- d. all of the above

5. Which of the following statements is **NOT** true?

- a. There are parts of the Earth that have extended daylight.
- b. The Earth revolves to create day and night.
- c. We have seasons because the Earth revolves.
- d. The Sun is higher in the sky and days are longer in the summer.

6. According to **The Earth Spins** which shows an effect of the Earth revolving?

- a. There are 24 hours in a day.
- b. Our nights are longer in the winter.
- c. We have day and night.
- d. Half of the Earth is in complete darkness in the winter.

7. What information can you learn from the diagrams in **The Earth Spins**?

- a. December at the South Pole brings total darkness.
- b. The summer solstice begins in December.
- c. The North Pole has 6 months of darkness in the winter.
- d. June at the North Pole brings total darkness.





Use both texts to answer the following questions.

<p>1. According to <b>The Earth Spins</b>, why does it seem that the Sun is rising and setting in the sky?</p> <p>a. The clouds are moving.  <b>b. The Earth is rotating.</b>  c. The Earth is revolving.  d. The Earth is tilted.</p> <p style="text-align: right;"><b>R.1</b></p>	<p>2. In paragraph 3 of <b>Earth's Revolution</b>, what does the word <b>modern</b> mean?</p> <p>a. <b>current</b>  b. outdated  c. old-fashioned  d. ancient</p> <p style="text-align: right;"><b>R.4</b></p>
<p>3. What happens in a leap year?</p> <p>a. Every four years, people skip a day on the calendar.  b. Every 400 years, we add a day to the calendar.  c. Every four years, people have no sunlight for six months.  <b>d. Every four years, we add a day to the calendar.</b></p> <p style="text-align: right;"><b>R.2</b></p>	<p>4. The Northern Hemisphere has summer when...</p> <p>a. the North Pole is tilted toward the Sun.  b. the South Pole is tilted away from the Sun.  c. the Southern Hemisphere has winter.  <b>d. all of the above</b></p> <p style="text-align: right;"><b>R.1</b></p>
<p>5. Which of the following statements is <b>NOT</b> true?</p> <p>a. There are parts of the Earth that have extended daylight.  <b>b. The Earth revolves to create day and night.</b>  c. We have seasons because the Earth revolves.  d. The Sun is higher in the sky and days are longer in the summer.</p> <p style="text-align: right;"><b>R.8</b></p>	<p>6. According to <b>The Earth Spins</b> which shows an effect of the Earth revolving?</p> <p>a. There are 24 hours in a day.  <b>b. Our nights are longer in the winter.</b>  c. We have day and night.  d. Half of the Earth is in complete darkness in the winter.</p> <p style="text-align: right;"><b>R.3</b></p>
<p>7. What information can you learn from the diagrams in <b>The Earth Spins</b>?</p> <p>a. December at the South Pole brings total darkness.  b. The summer solstice begins in December.  <b>c. The North Pole has 6 months of darkness in the winter.</b>  d. June at the North Pole brings total darkness.</p> <p style="text-align: right;"><b>R.7</b></p>	

Name: answer key Date: \_\_\_\_\_

Support your answer to the question with evidence from both texts.

How does the Earth's tilt affect you?

R.9



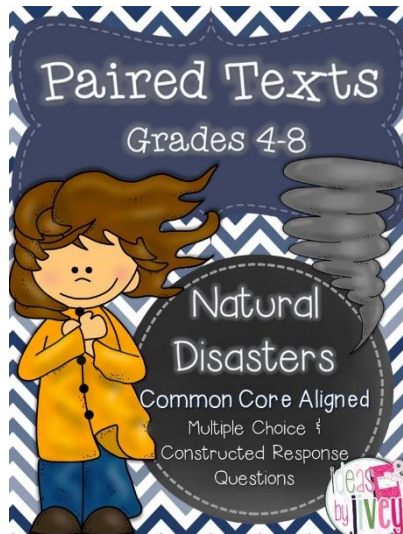
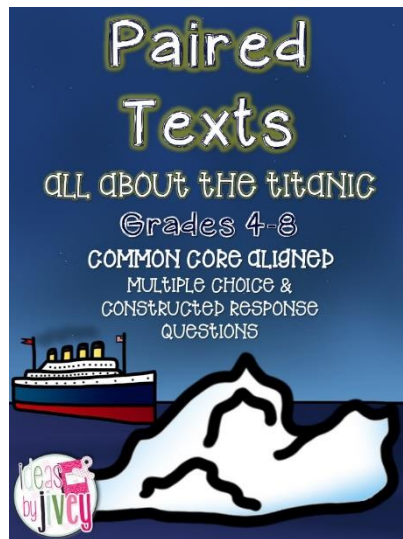
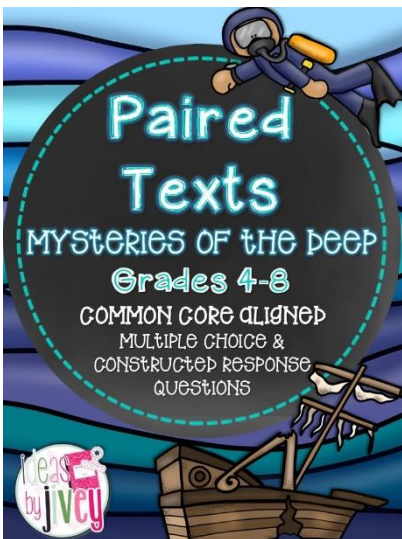
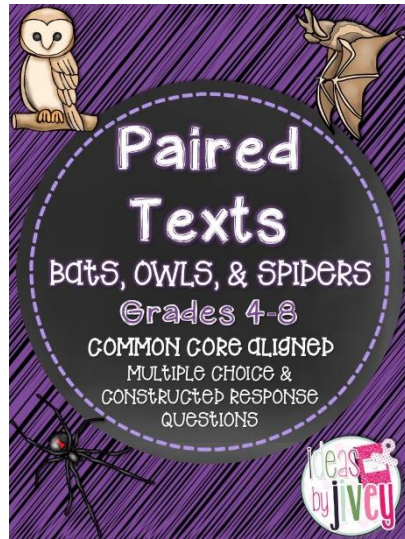
The response may include, but is not limited to:

It creates our seasons, we have longer days in the summer  
and shorter days in the winter, the temperature changes  
through the year, etc...



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