

**Earth, Moon, and Sun** ▪ *Guided Reading and Study*

## Phases, Eclipses, and Tides

*This section explains what causes phases of the moon, what causes eclipses, and what causes the tides.*

### Use Target Reading Skills

*Look at the Figure “Phases of the Moon” in your text. In the graphic organizer below, write a second question you have about the visuals. As you read about the moon, write the answers to both questions.*

Q. Why does the moon have phases?
A.
Q.
A.

### Motions of the Moon

- Circle the letter of each sentence that is true about motions of the moon.
  - The moon revolves around Earth once a year.
  - The same side of the moon always faces Earth.
  - The moon rotates slowly on its axis once every 27.3 days.
  - A “day” and a “year” on the moon are the same length.
- What causes the phases of the moon, eclipses, and tides?

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### Phases of the Moon

- The different shapes of the moon you see from Earth are called \_\_\_\_\_.
- How often does the moon go through an entire set of phases?

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**Phases, Eclipses, and Tides** *(continued)*

5. What does the phase of the moon you see depend on?

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6. Complete the table to show what you see during the different phases of the moon.

<b>Phases of the Moon</b>	
<b>Phase</b>	<b>What You See</b>
New moon	The side of the moon facing Earth is dark.
First quarter	<b>a.</b>
Full moon	<b>b.</b>
Third quarter	<b>c.</b>

d. Is the near side (facing Earth) always the dark side? Use the table to explain your answer.

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e. What percentage of the dark side of the moon do you see during the first and third quarters?

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**Eclipses**

7. When the moon's shadow hits Earth or Earth's shadow hits the moon, what occurs?  
\_\_\_\_\_
8. What are the two types of eclipses?  
a. \_\_\_\_\_ b. \_\_\_\_\_
9. The darkest part of the moon's shadow is called the \_\_\_\_\_ .
10. What causes a solar eclipse?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
11. The larger part of a shadow, less dark than the umbra, is called the \_\_\_\_\_ .
12. Circle the letter of each sentence that is true about solar eclipses.  
a. People in the umbra see only a partial solar eclipse.  
b. During a partial solar eclipse, part of the sun remains visible.  
c. During a total solar eclipse, the sky grows dark.  
d. People in the penumbra see a total solar eclipse.
13. What is the arrangement of Earth, moon, and sun during a lunar eclipse?  
\_\_\_\_\_  
\_\_\_\_\_
14. Circle the letter of each sentence that is true about lunar eclipses.  
a. People in Earth's umbra see a total lunar eclipse.  
b. A lunar eclipse always occurs at a full moon.  
c. During a lunar eclipse, Earth blocks sunlight from reaching the moon.  
d. A partial lunar eclipse occurs when the moon passes partly into the umbra of Earth's shadow.



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**Phases, Eclipses, and Tides** *(continued)*

**Tides**

15. The rise and fall of ocean water are called \_\_\_\_\_.

16. What force pulls the moon and Earth toward each other?  
\_\_\_\_\_

17. Why do tides occur?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

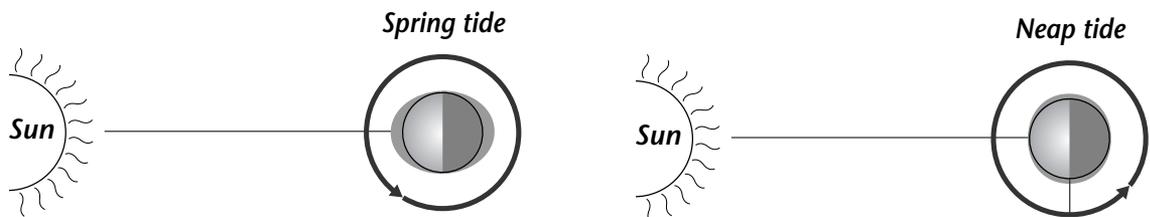
18. Circle the letter of each sentence that is true about tides.

- a. The point on Earth that is closest to the moon has a high tide.
- b. Every location on Earth has two high tides per month.
- c. A low tide occurs at the point on Earth farthest from the moon.
- d. The point on Earth farthest from the moon has a high tide.

19. What is a spring tide?  
\_\_\_\_\_  
\_\_\_\_\_

20. What is a neap tide?  
\_\_\_\_\_  
\_\_\_\_\_

21. On each of the illustrations below, draw a moon to show its position at a spring tide or at a neap tide.



22. Circle the letter of each of the phases of the moon when a spring tide occurs.

- a. new moon
- b. first quarter
- c. full moon
- d. third quarter