

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?

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?

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

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

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

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?

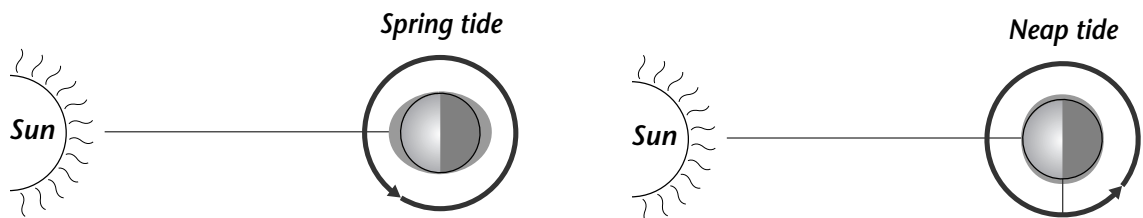
18. Circle the letter of each sentence that is true about tides.

- 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