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Characteristics of Waves ▪ *Guided Reading and Study*

What Are Waves? (pp. 510–514)

This section explains what causes waves and identifies two types of waves.

Use Target Reading Skills

Before you read the passage for each heading, fill in the top box with what you know. After you have read the passage, fill in the bottom box with what you have learned.

What You Know
1. Waves are high and low.
2. Waves move things up and down
3.
4.
5.

What You Learned
1. Mechanical waves can be transverse or longitudinal.
2. Transverse waves move the medium up
3. and down or side to side and they have crests and troughs.
4. Longitudinal waves move the medium
5. back and forth, and they have compression and rarefactions.

Waves and Energy (pp. 511–512)

1. What is a wave?
   A wave is a disturbance that transfers energy from place to place
2. The material through which a wave travels is called a(n) medium.
3. Circle the letter of each of the following that can act as mediums.
   a. solids
   b. liquids
   c. gases
   d. empty space ✓

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What Are Waves? *(continued)*

4. Waves that require a medium through which to travel are called
Mechanical waves

5. Is the following sentence true or false? When waves travel through a medium, they carry the medium with them. False

6. Explain what happens to the motion of a duck on the surface of a pond when a wave passes under it.
The duck moves up and down but does not move along the surface of the water with the wave.

7. Give an example of a wave that can travel through empty space.
A light wave from the Sun can travel through empty space.

8. Mechanical waves are produced when a source of energy causes a medium to vibrate.

9. What is a vibration?
A vibration is a repeated back & forth or up and down motion.

Types of Waves (pp. 512–514)

10. How are mechanical waves classified?
Mechanical waves are classified by how they move: Transverse or Longitudinal

11. Waves that move the medium at right angles to the direction in which the waves are traveling are called Transverse waves

12. Suppose you move the free end of a rope up and down to create a wave. In that case, the rope is the medium. What is the relationship between the movement of the wave and the movement of the particles of the medium?
In a transverse wave, the particles of the medium move in a direction that is perpendicular or at right angles to the direction of the wave.

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13. The highest parts of a transverse wave are called crests.

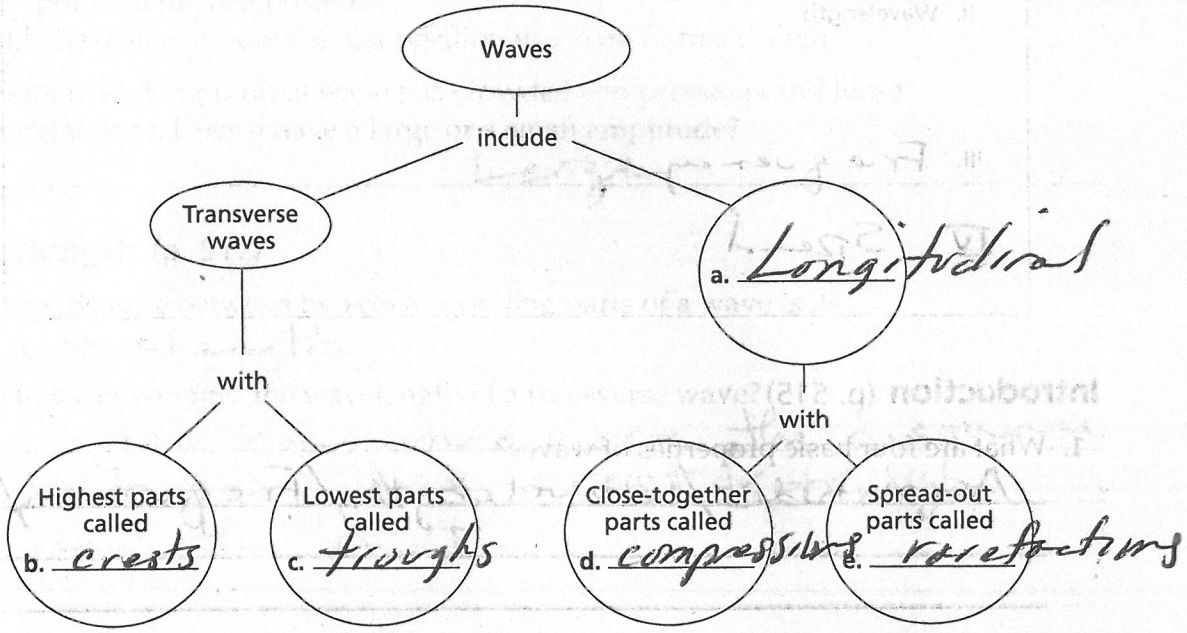
14. The lowest parts of a transverse wave are called troughs.

15. What type of waves move the particles of the medium parallel to the direction in which the waves are traveling?
Longitudinal Waves

16. In longitudinal waves in a spring, the parts where the coils are close together are called Compressions

17. In longitudinal waves in a spring, the parts where the coils are spread out are called Rarefactions

18. Complete this concept map about types of waves.



19. If you were to draw a longitudinal wave, you should think of the compressions as crests on a transverse wave and the rarefactions as troughs on a transverse wave.

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