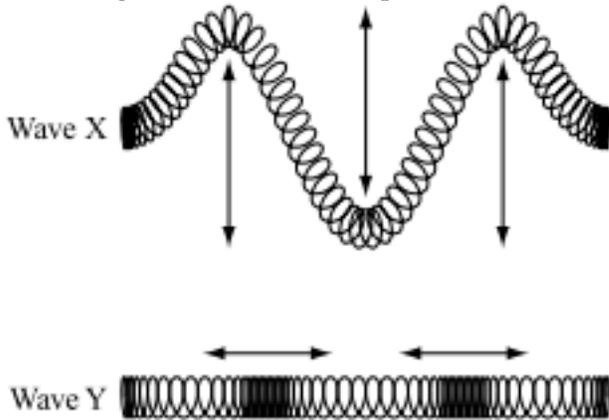


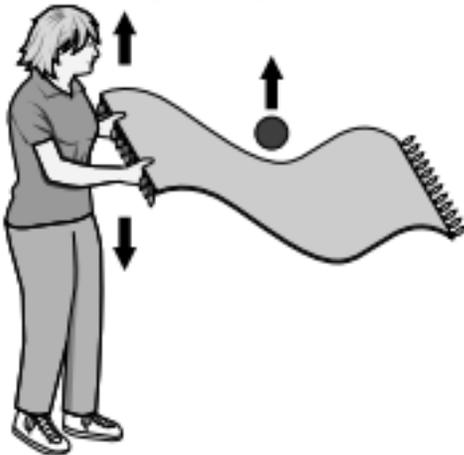
1. The diagram below shows a representation of two different waves.



Which of the following classifies wave X and wave Y?

- A. Both waves are transverse.
- B. Both waves are longitudinal.
- C. Wave X is longitudinal and wave Y is transverse.
- D. Wave X is transverse and wave Y is longitudinal.

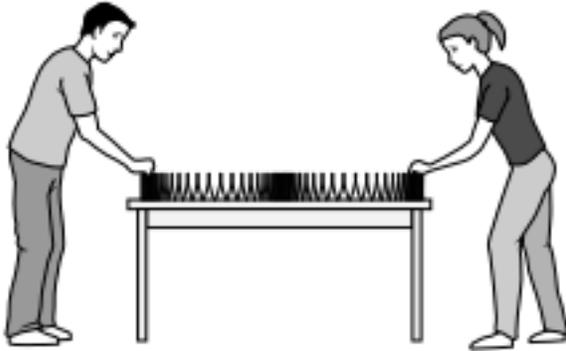
2. A student is shaking one end of a small rug with a ball on top of it. The wave that is produced travels through the rug and moves the ball upward, as shown in the diagram below.



Which type of wave is produced in the rug?

- A. compression
- B. electromagnetic
- C. longitudinal
- D. transverse

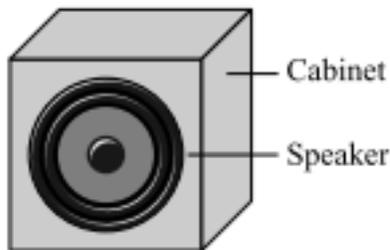
3. The diagram below shows two students making a wave with a coiled spring.



Which of the following waves move most like the wave in the coiled spring?

- A. infrared waves
- B. microwaves
- C. sound waves
- D. ultraviolet waves

4. The picture below shows a sound speaker in a cabinet with its front panel removed.



When music plays through the speaker, the speaker rapidly moves back and forth in the cabinet. Which of the following conclusions is **best** supported by this observation?

- A. Sound travels only in air.
- B. Sound is a transverse wave.
- C. Sound is a longitudinal wave.
- D. Sound travels at the speed of light.

5. When a student listens to music, sound waves propagate from the speaker to her ear. Which of the following is a physical description of this process?

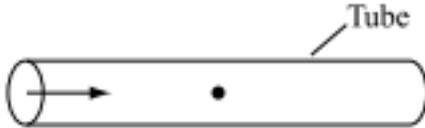
- A. Particles produced at the speaker move to the student's ear.
- B. Energy is transported from the speaker to the student's ear.
- C. Material is transferred from the speaker to the student's ear.

D. Clusters of air molecules are sent from the speaker to the student's ear.

6. A rope is stretched horizontally between two students. One of the students shakes an end of the rope up and down. Which of the following terms **best** describes the type of wave that is produced?

- A. electromagnetic
- B. longitudinal
- C. rotational
- D. transverse

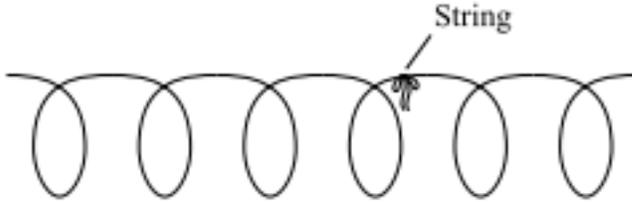
7. A person creates a longitudinal wave by shouting into a tube in the direction indicated by the arrow on the diagram below. The dot inside the tube represents an air particle in the tube before the wave reaches it.



Which of the following diagrams **best** represents the motion of the air particle when the wave travels through the tube?

- A. 
- B. 
- C. 
- D. 

8. A string is tied on a spring. Two students then stretch out the spring, as shown below.



In which of the following ways does the string move when the students generate a longitudinal wave in the spring?



9. A large spring is stretched horizontally between two people. One person wiggles the spring up and down at one end. The up-and-down vibration then moves along the spring to the other person.

Which of the following types of wave is created in the spring?

- A. pressure wave
- B. transverse wave
- C. longitudinal wave
- D. non-mechanical wave

10. Which of the following statements applies to a longitudinal wave?

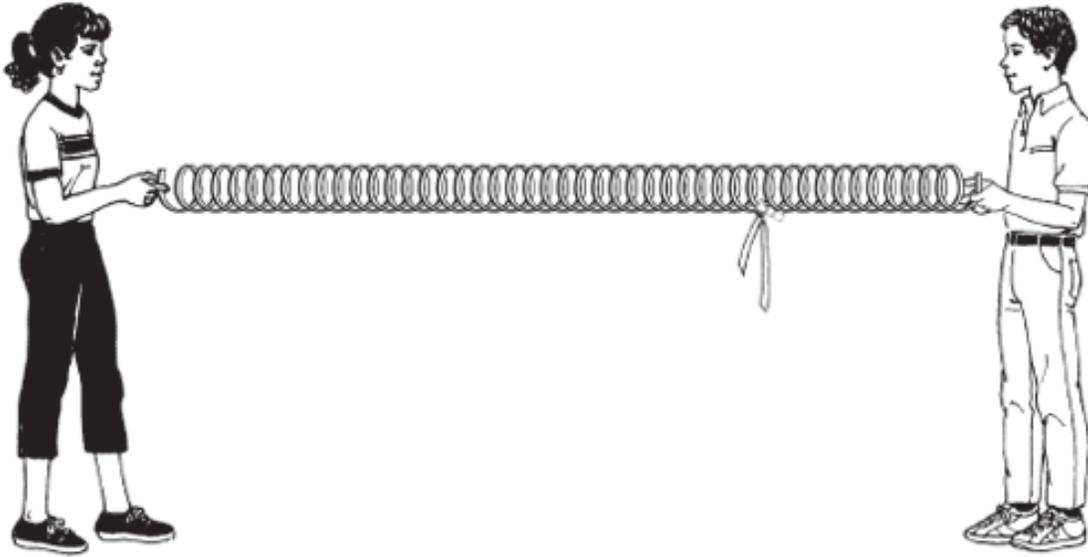
- A.** The motion of the medium is random.
- B.** The motion of the medium is in a circular pattern.
- C.** The motion of the medium is parallel to the motion of the wave.
- D.** The motion of the medium is perpendicular to the motion of the wave.

11. Which of the following is possible due to longitudinal waves?

- A.** seeing the color red
- B.** getting a tan at the beach
- C.** hearing the sound of the ocean
- D.** riding a wave on a surfboard

Standard: 4.3 - Distinguish between the two types of mechanical waves, transverse and longitudinal. 6

12. The drawing below shows two students holding the ends of a spring that has a ribbon attached to it.



In your Student Answer Booklet:

- a. Draw and explain how a transverse wave will move along the spring.
- b. Draw and explain how the ribbon will move when a transverse wave is sent along the spring.
- c. Draw and explain how a longitudinal wave will move along the spring.
- d. Draw and explain how the ribbon will move when a longitudinal wave is sent along the spring.