Name: _____ **Date:** _____

1. A sound wave is produced in a metal cylinder by striking one end. Which of the following occurs as the wave travels along the cylinder?

   A. Its amplitude increases. B. Its frequency increases.

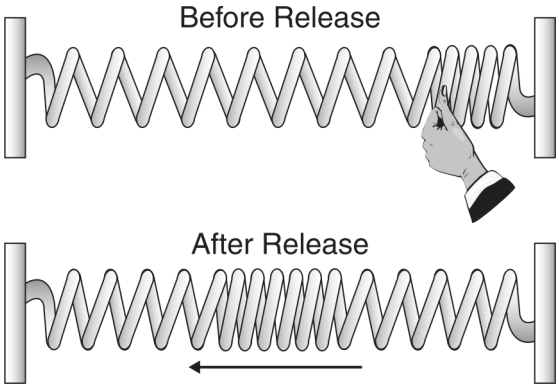
   C. It transfers matter. D. It transfers energy.

2. A radio station transmits to a receiving antenna. The radio wave sent is a

   A. sound wave. B. torsional wave.

   C. longitudinal wave. D. transverse wave.

3. A stretched spring attached to two fixed points is compressed on one end and released, as shown below.



   The resulting wave travels back and forth between the two fixed ends of the spring until it comes to a stop. This mechanical wave is an example of a

   A. transverse wave. B. longitudinal wave.

   C. superpositioned wave. D. refracted wave.

4. One end of a horizontal string is caused to oscillate vertically while the other end is attached to a fixed object. The wave that travels along the string is an example of

   A. an electromagnetic wave. B. a transverse wave.

   C. a microwave. D. a longitudinal wave.

5. Astronauts on the Moon would *not* be able to hear a landslide because

   A. the lunar dust deadens sounds.

   B. intensive sunlight destroys sound waves.

   C. the magnetic field of the Moon is too weak to carry sound.

   D. air molecules on the Moon are too far apart to carry sound.

6. Sound waves cannot carry energy through

   A. water. B. air.

   C. a mirror. D. a vacuum.

7. Objects appear different in size and shape in a container of water due to

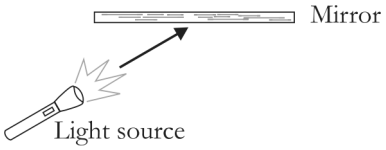
   A. refraction of the light waves.

   B. interference of the water and light waves.

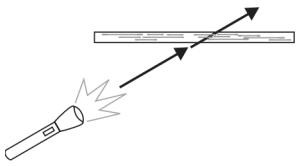
   C. polarization of the light waves.

   D. diffraction of the light waves.

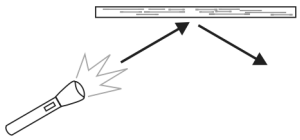
8. Which picture shows how a mirror reflects light?



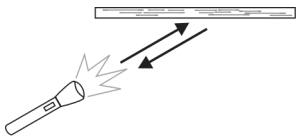
   A.



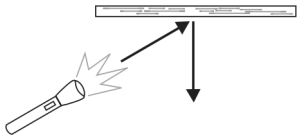
   B.



   C.



   D.



9. José and Lisa are watching their friends play basketball. They **see** the ball hit the backboard before they **hear** the ball hit the backboard. What would account for this slight delay?

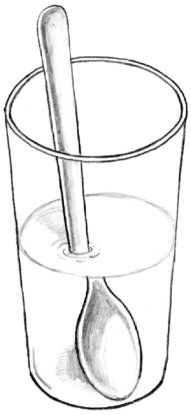
   A. Light travels faster than sound.

   B. Sound travels faster than light.

   C. Light had to travel farther.

   D. Sound had to travel farther.

10. Use the picture below to answer the following question.



The spoon appears to be broken where it enters the water because

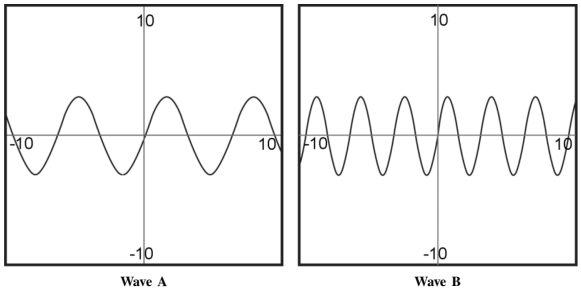
A. the light is reflected by the water.

B. the light is absorbed by the water.

C. the light is bent by the water.

D. the light is dissolved by the water.

11. Use these graphs to answer the question.



The two waves above are traveling at the same speed. Which statement best describes the difference between the waves?

A. Wave A has a higher frequency than wave B.

B. Wave A has a lower frequency than wave B.

C. Wave A has a higher amplitude than wave B.

D. Wave A has a lower amplitude than wave B.

12. A student hears the sound of a bell. Which of the following carries the sound of the bell to the student?

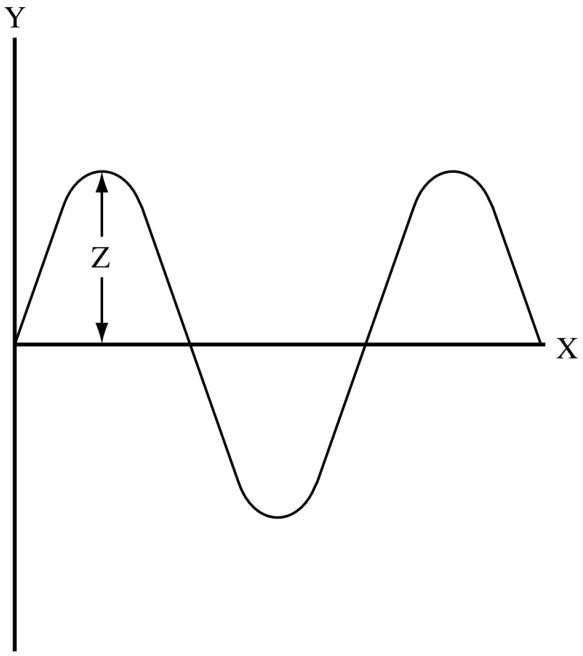
A. electrical currents

B. magnetic signals

C. radio waves

D. vibrating air

13. The diagram below shows a wave trace.



Distance Z is a measure of

A. amplitude.

B. frequency.

C. wavelength.

D. wave speed.

14. Five bowling balls are lined up touching one another on a smooth surface. Striking the first ball with a hammer makes the fifth ball move away from the group. The force of the hammer was transmitted through the line of balls as what type of wave?

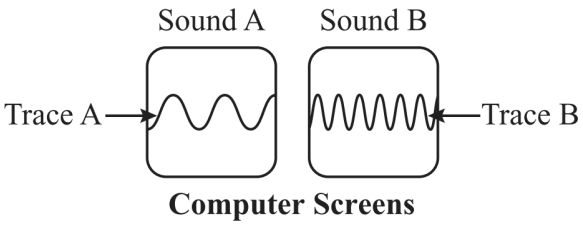
A. electromagnetic

B. heat

C. longitudinal

D. transverse

15. The illustration below shows wave traces of recorded sound waves on two computer screens.



Traces A and B represent two different sounds with the same time scale horizontally.

From a comparison of the wave traces, which of the following *correctly* describes the relationship of sound B to sound A?

A. Sound B has a higher velocity.

B. Sound B has a higher amplitude.

C. Sound B has a higher frequency.

D. Sound B has a longer wavelength.

16. Which of the following is a *main* factor that affects the speed of a wave?

A. the pitch of sound

B. the loudness of sound

C. the amplitude of the wave

D. the properties of the medium

17. Which of the following waves travels *fastest*?

A. water waves in oceans

B. seismic waves in rocks

C. sound waves from a violin string

D. electromagnetic waves from the Sun

18. Which of the following can carry light waves but not sound waves?

A. air B. steel C. water D. vacuum

19. Two students stretch a rope horizontally between them. One student moves one end of the rope up and down repeatedly for a short time.

Which of the following describes the frequency of the waves in the rope?

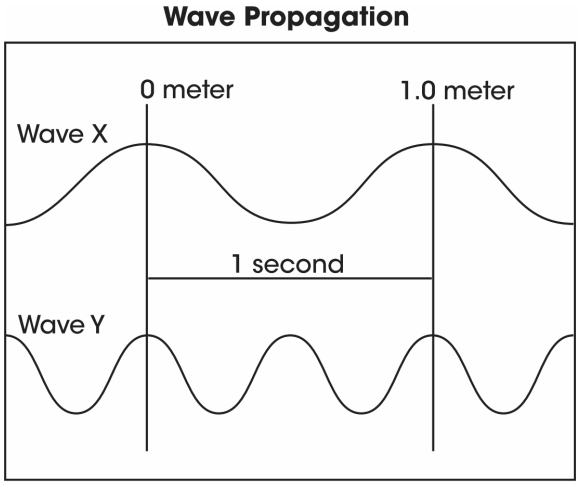
A. the height that the rope reaches when moved up

B. the amount of time it takes for one wave to travel the length of the rope

C. the number of times the rope is moved up and down in a time interval

D. the distance measured between the crest of one wave and the crest of the next wave in the rope

20. In the diagram below, similar types of waves with the same amplitude travel in the same medium.



Compared to wave *X*, which statement is correct?

A. Wave *Y* has greater speed.

B. Wave *Y* has less energy.

C. Wave *Y* has a lower frequency.

D. Wave *Y* has a shorter wavelength.

21. Which *best* explains the relationship between the speed of sound and the medium through which it passes?

A. Sound travels faster in solids because of the increased distance between solid particles.

B. Sound travels faster in air because of the decreased distance between air particles.

C. Sound travels slower in air because of the increased distance between air particles.

D. Sound travels slower in solids because of the decreased distance between solid particles.

22. Which of the following is an example of refraction?

A. A man combs his hair while looking in a mirror.

B. A woman feels warm wearing black on a bright day.

C. A man thinks a fish in water is closer than it really is.

D. A room with brown walls becomes brighter when it is painted white.

23. Which is the lowest point of a transverse wave?

A. amplitude B. crest C. period D. trough

24. If waves of a fixed frequency are passing through an opening, what hapeens to the diffraction of the wave as the width of the opening is increased?

A. It increases.

B. It increases and then decreases.

C. It decreases.

D. It remains the same.

25. Earthquake vibrations are detected, measured, and recorded by instruments called

A. sonargraphs.
B. seismographs.
C. Richter scales.
D. magnetometers.

26. The Richter scale measures which of the following earthquake characteristics?

A. intensity
B. magnitude
C. frequency
D. probability

27. A geologist checks her seismometer for activity after an earthquake that occurs on the other side of Earth. The instrument records P-waves, but not S-waves.

What statement explains why S-waves are *not* recorded?

A. Seismometers do not record evidence of S-waves.

B. S-waves travel in a different direction than P-waves.

C. The earthquake was not strong enough to produce S-waves.

D. The S-waves were stopped by a liquid interior layer.

28. Earthquake waves are recorded by seismograph machines.

What does an earthquake wave transmit?

A. energy
B. light
C. particles
D. speed