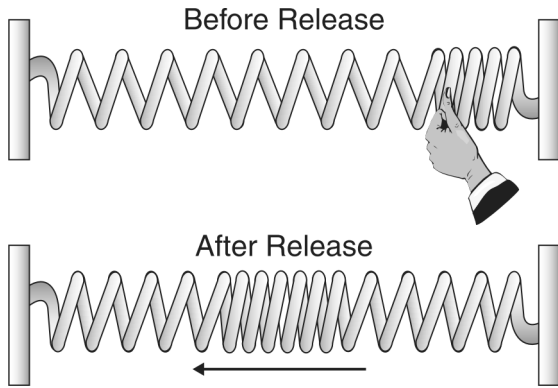


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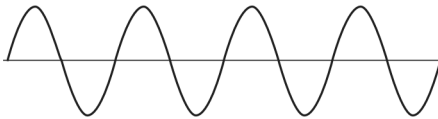
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1. A stretched spring attached to two fixed points is compressed on one end and released, as shown below.



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.
2. The diagram below represents a wave pattern.



Which type of wave is represented?

- A. longitudinal wave B. transverse wave
 C. sound wave D. primary wave
3. Which is the lowest point of a transverse wave?
- A. amplitude B. crest C. period D. trough
4. How are earthquakes, sound, and light waves alike?
- A. They transmit energy. B. They carry matter.
 C. They travel in space. D. They can be seen.

5. Angelina wakes up on a sunny but cool day and can choose to wear a T-shirt in one of the following four colors:

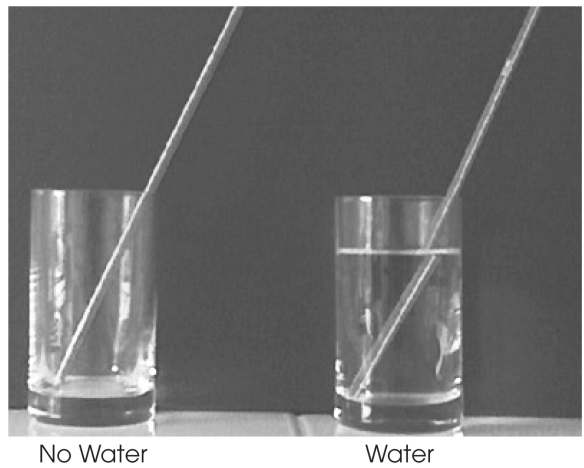
- Black
- Pink
- White
- Yellow

She decides to wear the black T-shirt because it will take in more of the sun's light than the other T-shirts.

Which property of light is Angelina using to stay warm?

- A. Absorption B. Brightness
 C. Reflection D. Refraction

6. A student looks at the two glasses pictured below. One of the glasses contains water.



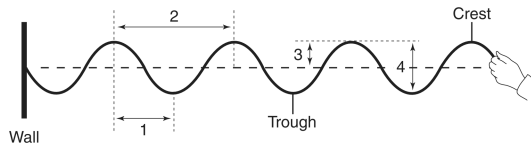
Why does the straw in the glass for water appear to be split at the surface of the water?

- A. The water reflects light that passes through it.
 B. The water refracts light passing through it.
 C. The water scatters light passing through it.
 D. The water absorbs light passing through it.

7. During a space walk, an astronaut lets go of a tool, causing it to float away and bounce off the side of the space shuttle. Why does the astronaut see the tool hit the shuttle but not hear it?
- A. Light waves cannot travel through a vacuum. However, sound waves can.
 - B. Sound waves cannot travel through a vacuum. However, light waves can.
 - C. Neither sound nor light waves can travel through a vacuum.
 - D. Both sound and light waves can travel through a vacuum.

8. Use the diagram below to answer the following question(s).

A student produces a series of waves, as shown below.



Which number in the diagram represents a wavelength?

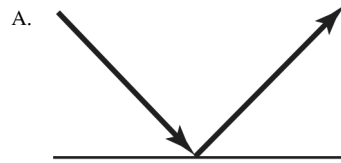
- A. 1
 - B. 2
 - C. 3
 - D. 4
9. Waves produced by different sources are shown in the data table below.

Source	Type of Wave
Earthquake	Earthquake
Light bulb	Light
Radio	Sound

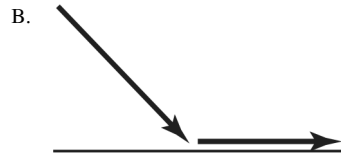
Which statement *best* describes the relationship among the waves?

- A. All transfer energy.
- B. All are the same frequency.
- C. All have equal wavelengths.
- D. All travel at the same speed.

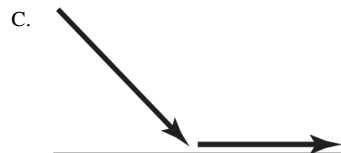
10. Which diagram *best* represents the reflection of light rays from a plane mirror?



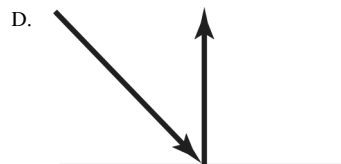
Mirror



Mirror

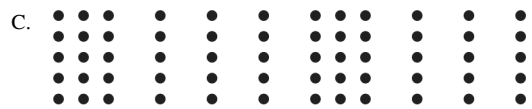
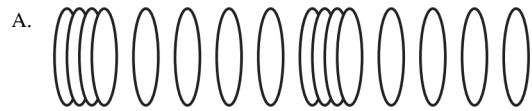


Mirror

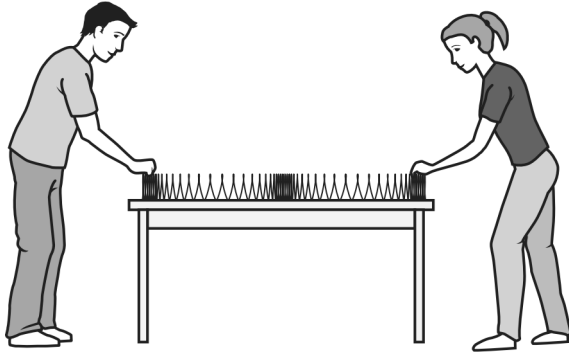


Mirror

11. Which of the following *best* represents an electromagnetic wave?



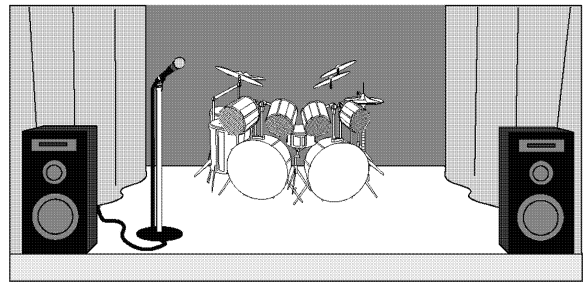
12. The diagram below shows two students making a wave with a coiled spring.



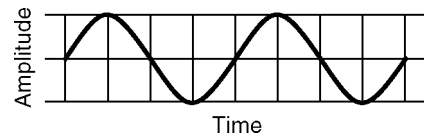
Which of the following waves move most like the wave in the coiled spring?

- A. infrared waves B. microwaves
C. sound waves D. ultraviolet waves
13. Which of the following statements *best* describes a difference between mechanical waves and electromagnetic waves?
- A. Mechanical waves can produce colored light, while electromagnetic waves cannot.
B. Mechanical waves can travel in any direction, while electromagnetic waves travel only in one direction.
C. Mechanical waves travel only through a medium, while electromagnetic waves can also travel through a vacuum.
D. Mechanical waves travel only at the speed of light, while electromagnetic waves can travel at many different speeds.
14. Which of the following statements *best* describes the visible spectrum of light as seen by the human eye?
- A. The lowest frequency appears red, and the highest frequency appears violet.
B. The lowest frequency appears red, and the highest frequency appears yellow.
C. The lowest frequency appears green, and the highest frequency appears violet.
D. The lowest frequency appears green, and the highest frequency appears yellow.
15. Which of the following statements *best* describes an electromagnetic wave with a long wavelength?
- A. It has a low frequency and can travel in a vacuum.
B. It has a high frequency and can travel in a vacuum.
C. It has a low frequency and can only travel in a medium.
D. It has a high frequency and can only travel in a medium.

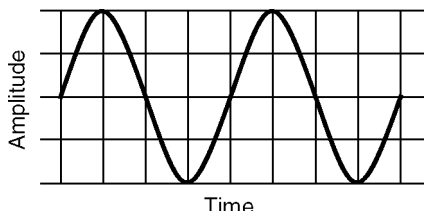
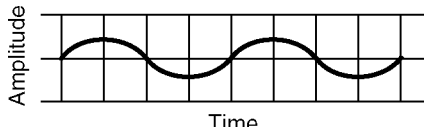
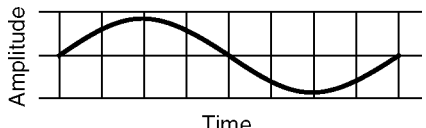
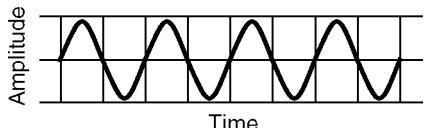
16. **The Concert**



An oscilloscope is an instrument that can be used to show the wave characteristics of sound. The students used an oscilloscope to display the sound produced when the band's singer sang a note. The display on the oscilloscope is shown below.



Which of the following would most likely be shown by the oscilloscope if a note with a higher pitch than the one shown above were sung?

- A. 
- B. 
- C. 
- D. 
17. 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.

