

Name: _____

Date: _____

1.

In order for a fish to see a bug just above the surface of the water, light travels from the insect through the air and crosses into the water until it reaches the fishes' eye. Which statement is true regarding the light wave as it travels?

- A. It will bend as it hits the water because it slows down.
 - B. It will bend as it hits the water because the water particles move slower than air.
 - C. It will travel straight from the bug to the fishes' eye because that is the most direct path.
 - D. It will travel straight from the bug to the fishes' eye because it will continue to travel at the speed of light.
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2.

You and your father inspect an empty house with the hopes of buying it. You walk through the rooms talking to one another, and you notice that your voices and footsteps are echoing in the big, empty house. What causes the echo?

- A. sound waves moving slowly through air
 - B. sound waves moving around the large rooms
 - C. sound waves refracting around corners in the empty rooms
 - D. sound waves reflecting off smooth, flat surfaces throughout the house
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3.

As the fire truck approached Mary, the pitch of the siren got higher. Once the fire truck passed and moved away, the siren's pitch got lower. This change in pitch is because of a change in the sound wave's

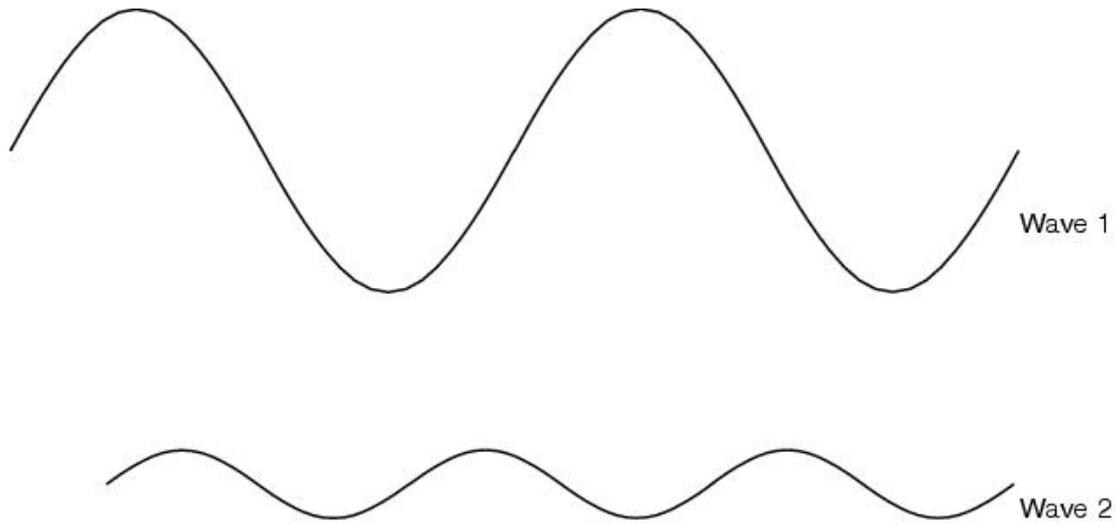
- A. amplitude.
 - B. concussion.
 - C. frequency.
 - D. reflection.
-

4.

Porous building materials are often used on the surfaces in classrooms and restaurants because these surface tend to _____ sound waves.

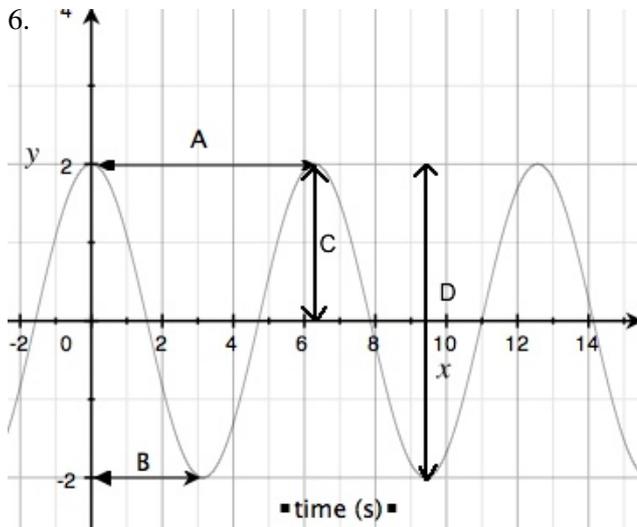
- A. absorb
 - B. refract
 - C. reflect
 - D. transmit
-

5. Waves 1 and 2 show two different sound waves. Look carefully at the two waves.



In what ways do their wave characteristics differ?

- A. Wave 1 has a longer wavelength and lower amplitude than wave 2.
 - B. Wave 1 has a shorter wavelength and higher amplitude than wave 2.
 - C. Wave 1 has a longer wavelength and a higher amplitude than wave 2.
 - D. Wave 1 has a shorter wavelength and a lower amplitude than wave 2.
-



After the train passed, the **pitch** of the train whistle became lower. This change in sound would be represented by what change in the diagram above?

- A. The distance represented by "A" would increase.
 - B. The distance represented by "A" would decrease.
 - C. The distance represented by "C" would increase.
 - D. The distance represented by "C" would decrease.
-

7.

A tuning fork with a frequency of 404 Hertz is struck with a soft hammer. The fork is struck a second time by the same hammer with twice as much force, and the volume, or amplitude, increases by a factor of two. What will the frequency of the second sound be?

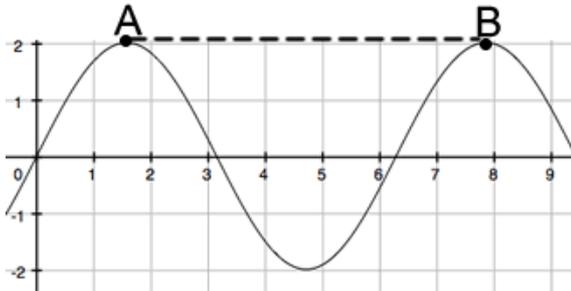
- A. 101 Hertz
 - B. 202 Hertz
 - C. 404 Hertz
 - D. 808 Hertz
-

8.

The waves in the pool where you are floating have a crest height of about 1 foot. Bobby does a cannonball dive off the side of the pool and sends waves 4 feet high toward your raft. The waves that Bobby produced have a greater

- A. amplitude.
 - B. compression.
 - C. frequency.
 - D. wavelength.
-

9.



The wave pictured above represents a sound wave. If the distance from "A" to "B" increased, what would happen to the pitch?

- A. The pitch would be louder.
- B. The pitch would be softer.
- C. The pitch would be higher.
- D. The pitch would be lower.

10. The distance between one point on a compression and the corresponding point on the next compression in a sound wave is called a —

- A. wavelength.
- B. rarefaction.
- C. crest.
- D. trough.

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11. The distance between a wave's crest and its trough is known as its

- A. low tide measurement.
- B. water depth.
- C. wave height.
- D. wave length.

12.

All waves transmit

- A. energy.
- B. mass.
- C. matter.
- D. radiation.

13.

Which of these is one way that mechanical waves differ from electromagnetic waves?

- A. Mechanical waves require energy and electromagnetic waves do not.
 - B. Mechanical waves require a medium and electromagnetic waves do not.
 - C. Electromagnetic waves require a medium and mechanical waves do not.
 - D. Mechanical waves transmit matter and electromagnetic waves transmit energy.
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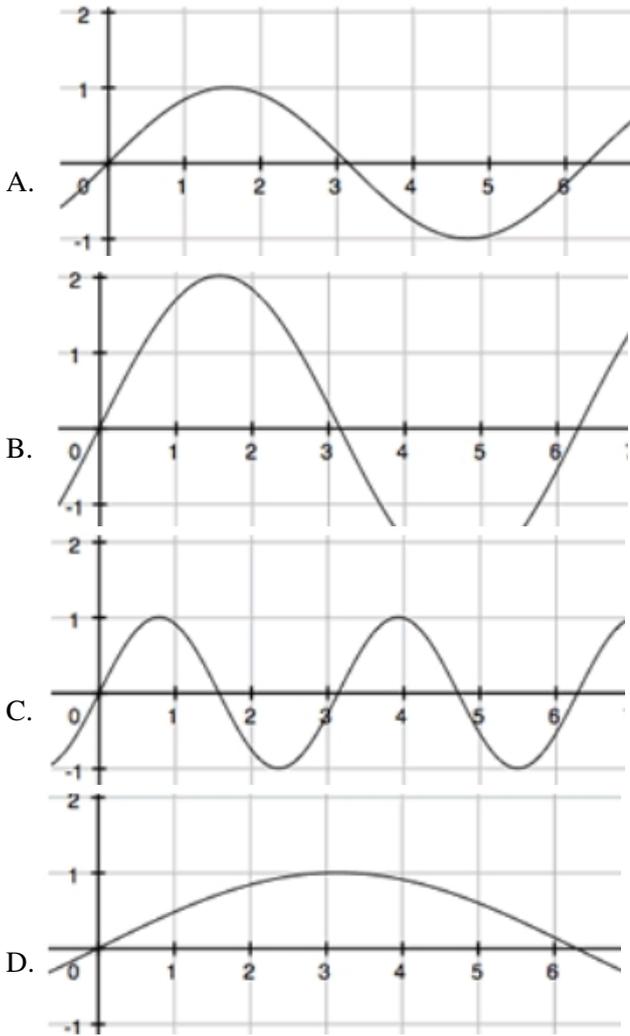
14.

Electromagnetic waves and mechanical waves are alike and different. What is one way in which these waves are similar?

- A. Both types of waves require a medium.
 - B. Both types of waves have a frequency.
 - C. Both types of waves transmit matter.
 - D. Both types of waves have a pitch.
-

15.

Assume waves A, B, C, and D, illustrated above, each represent a different wave of the electromagnetic spectrum. Which wave would MOST likely cause be energetic enough to damage living human cells?



16.

You are sitting on the edge of a pool with your legs in the water. As light waves pass from the pool into the air, it looks like your legs are not attached at the knees where they meet the water. This is because light waves _____ when they pass from one medium to another.

- A. are amplified
- B. diffract
- C. reflect
- D. refract

17.

There are two basic finishes to most paper, glossy and matte. A glossy finish is used to produce a higher finish quality, for instance the cover of a magazine. A matte finish is used to produce a softer finish with less glare, for instance your notebook paper. If you were to compare both of these surfaces under a high-powered microscope, how would they differ?

- A. The matte surface would be much rougher.
 - B. The glossy surface would contain more fibers of white paper.
 - C. The glossy surface would be still, while the matte surface would appear to move slightly.
 - D. The matte surface would be solid, while the glossy surface would appear to have small holes.
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18.

You can see your image in a shiny, flat surface because light waves bounce directly back at you and your eyes. This is an example of

- A. diffraction.
 - B. reflection.
 - C. refraction.
 - D. transparency.
-

19.

It was a cold, sunny day and the ground was covered with fresh snow. Maria wore her black sweatshirt outside to play in the snow. She knew that black would _____ light waves and help keep her warm.

- A. absorb
 - B. diffract
 - C. reflect
 - D. refract
-

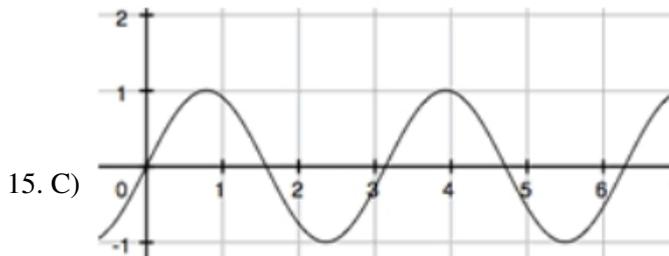
20.

As light waves pass through openings in a barrier or around the edges of an object, the waves change direction or

- A. are absorbed.
- B. diffract.
- C. reflect.
- D. refract.

Answer Key

1. A) It will bend as it hits the water because it slows down.
2. D) sound waves reflecting off smooth, flat surfaces throughout the house
3. C) frequency.
4. A) absorb
5. C) Wave 1 has a longer wavelength and a higher amplitude than wave 2.
6. A) The distance represented by "A" would increase.
7. C) 404 Hertz
8. A) amplitude.
9. D) The pitch would be lower.
10. A) wavelength.
11. C) wave height.
12. A) energy.
13. B) Mechanical waves require a medium and electromagnetic waves do not.
14. B) Both types of waves have a frequency.



16. D) refract
17. A) The matte surface would be much rougher.
18. B) reflection.
19. A) absorb
20. B) diffract.