

Name: _____ Date: _____

Answer Key: Making Waves: A 4th Grade Shimmer and Shout Quiz

Identify how energy moves through whale songs and flashlight beams in this quick formative assessment on mechanical and electromagnetic waves.

1. Imagine you are watching a humpback whale sing underwater. What is the whale's sound traveling through to reach your ears?

Answer: C) Liquid water

Sound is a mechanical wave that needs a medium, or matter, to travel through. In the ocean, the water acts as that medium.

2. True or False: Light from a flashlight can travel through a completely empty vacuum where there is no air.

Answer: A) True

Light is an electromagnetic wave, which means it does not need a medium like air or water to move; it can travel through the vacuum of space.

3. When you look into a calm pond and see your own face, the light is bouncing off the water. This is called _____.

Answer: B) Reflection

Reflection happens when light waves hit a surface and bounce back, allowing us to see images like mirrors or reflections in water.

4. If you play a very high note on a flute, you are changing the wave's pitch. What part of the wave determines if a sound is high or low?

Answer: A) Frequency

Frequency refers to how many waves pass a point in a certain amount of time. Higher frequency creates a higher pitch.

5. True or False: Sound waves travel faster than light waves.

Answer: B) False

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Light waves travel much faster than sound waves. This is why you see lightning before you hear the thunder.

6. Which of these is the best example of a translucent object that lets some light through but scatters it?

Answer: C) A piece of frosted wax paper

Translucent materials like wax paper allow some light to pass through but blur the image, unlike transparent glass or opaque wood.

7. A sound wave is created by back-and-forth movements called _____.

Answer: C) Vibrations

Vibrations are the rapid back-and-forth movements that create sound waves in a medium.

8. Why does a straw look 'broken' or bent when you put it in a glass of water?

Answer: B) The light waves slow down and bend

This is called refraction. Light bends when it moves from one medium (air) into another (water) because its speed changes.

9. True or False: Increasing the amplitude of a sound wave makes the sound quieter.

Answer: B) False

Amplitude relates to the height of the wave. A larger amplitude carries more energy and results in a louder sound.

10. If you yell into a deep canyon and hear your voice come back a few seconds later, you have created a(n) _____.

Answer: A) Echo

An echo is a sound wave that has reflected, or bounced off, a distant surface and returned to the listener.