

Name: \_\_\_\_\_ Date: \_\_\_\_\_

## Answer Key: Zap the Vibe: 2nd Grade Sound and Light Challenge

Examine how vibrations ignite sound and light travels through shadows to evaluate energy behaviors in everyday scenarios.

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**1. A scientist places a bell inside a glass jar and sucks all the air out. When the bell rings, there is no sound. Why did the sound disappear?**

**Answer:** C) Sound needs air particles to travel through.

Sound is a mechanical wave that requires a medium, like air, to carry the vibrations to our ears.

**2. If you tap a large drum slowly and then tap it very quickly, you are changing the \_\_\_\_\_ of the sound waves.**

**Answer:** B) Frequency

Frequency refers to how many wave cycles happen in a certain amount of time; tapping faster increases the frequency.

**3. Light waves are able to travel through the empty darkness of outer space where there is no air.**

**Answer:** A) True

Unlike sound, light is an electromagnetic wave and does not need a material or medium to move.

**4. Imagine you are standing behind a brick wall. You can hear your friend calling you, but you cannot see them. Why is this happening?**

**Answer:** A) Sound can bend around corners, but light travels in straight lines.

Sound waves exhibit diffraction (bending) more easily around large objects than visible light waves do.

**5. When light hits a shiny silver tray and bounces back toward your eyes, this process is called \_\_\_\_\_.**

**Answer:** B) Reflection

Reflection occurs when wave energy (like light) hits a surface and bounces back rather than passing through.

**6. You put a straw into a glass of water and notice the straw looks broken or bent at the water line. What is happening to the light?**

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**Answer:** C) The light is slowing down and bending (refraction).

Refraction is the bending of light as it passes from one medium (air) into another (water) at a different speed.

**7. A sound with a high frequency will always sound like a very deep, low growl.**

**Answer:** B) False

High frequency waves create high-pitched sounds, like a whistle, not low growls.

**8. An opaque object, like a wooden door, creates a \_\_\_\_\_ because it blocks light waves from passing through.**

**Answer:** C) Shadow

Shadows are formed in areas where light waves are blocked by an object that is not transparent.

**9. If you want to make a sound louder, you should increase the \_\_\_\_\_ of the wave.**

**Answer:** B) Amplitude

Amplitude measures the height or strength of a wave; higher amplitude results in more volume or intensity.

**10. White light is actually made up of a mixture of many different colors of light waves.**

**Answer:** A) True

White light contains the full spectrum of colors, which can be seen individually when light is refracted through a prism.