Name: _____ **Date:** _____

Answer Key: Sonic Boom! 2nd Grade Sound & Light Heroes Quiz

Challenge your young scientists to solve light puzzles and sound mysteries in this advanced classroom challenge.

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1. Imagine you are designing a secret room. If you want to stop sound from traveling through the walls and waking up your neighbors, which material should you use to line the walls?

Answer: B) Thick, fuzzy foam panels

Soft, fuzzy materials like foam 'soak up' or absorb vibrations, preventing sound energy from passing through to the other side.

2. If you go to a place where there is absolutely no air, like deep outer space, you would still be able to hear a drum beating right next to you.

Answer: B) False

Sound is a mechanical wave that needs a medium (like air or water) to travel through. Without air particles to vibrate, no sound can move.

3. When you shine a flashlight into a clear glass of water, the light beam looks like it bends or breaks. Scientists call this ____.

Answer: A) Refraction

Refraction happens when light changes speed as it moves from air into water, making objects under the water look like they are in a different spot.

4. You are making a 'rubber band guitar' for a concert. If you want to make a very HIGH-pitched sound, how should you change the rubber band?

Answer: C) Stretch the rubber band very tight

Tighter objects vibrate much faster. Faster vibrations create a higher frequency, which we hear as a high pitch.

5. A Shadow Puppet Show needs a light source and an object. To make the shadow on the wall look MUCH BIGGER, what should the puppeteer do?

Answer: A) Move the puppet closer to the light source

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When an object is closer to the light, it blocks more of the light rays, creating a larger area of darkness (the shadow) on the wall.

6. Light can travel through a vacuum (empty space), which is why we can see light from the stars even though there is no air between them and Earth.

Answer: A) True

Unlike sound, light is an electromagnetic wave that does not need particles to move; it can travel through the emptiness of space.

7. If you are wearing a bright red shirt, why does it look red to your friends?

Answer: B) The shirt reflects red light back to their eyes

Objects appear a certain color because they absorb most colors of light but bounce (reflect) the color we see back to our eyes.

8. A humpback whale sings a song deep under the ocean. This sound will travel ____ than a human shouting in the air.

Answer: B) Faster

Sound actually travels faster through liquids (like water) and solids than through gases (like air) because the particles are closer together.

9. Loud sounds have more energy and higher 'amplitude' (bigger waves) than quiet sounds.

Answer: A) True

Volume (loudness) is determined by how much energy the wave has. More energy creates a taller wave, which is a higher amplitude.

10. If you look into a mirror, you see yourself because the light hits the smooth surface and bounces straight back. This 'bouncing' is called ____.

Answer: C) Reflection

Reflection is when light hits a surface and bounces off, similar to a ball bouncing off a wall.