

Mississippi 8th Grade Science Practice Quiz – Behavior of Waves / Applications

Questions 1–3: Capturing & Converting Wave Energy into Electrical Energy (P .8.6.2)

1. A hydroelectric dam uses the flow of water to spin turbines that generate electricity. Which statement best explains this process?
 - Water waves directly generate electricity without mechanical parts.
 - Moving water transfers energy to turbines, which convert mechanical energy into electrical energy.
 - Water absorbs electricity from the turbines and releases it as waves.
 - Turbines create water waves, which are then converted into energy.
2. A student sets up a small wave tank to simulate ocean waves turning a miniature turbine connected to a light bulb. What measurement would best show **how much electrical energy is produced?**
 - The height of the waves in the tank
 - The brightness of the light bulb
 - The color of the water
 - The speed of the waves only
3. A solar panel converts sunlight into electrical energy. Which statement correctly describes this process?
 - Photons from light hit the panel and cause electrons to move, producing electricity.
 - Light warms the panel, creating steam that generates electricity.
 - Light energy bounces off the panel and powers a turbine.
 - The panel stores light as chemical energy without converting it.

Questions 4–7: Wave Technology (P .8.6.7)

4. A student is using ultrasound waves in a medical lab to create an image of a small object inside a container. Which property of waves allows ultrasound imaging to work?
 - Absorption of waves into the object completely
 - Transmission of waves without interaction
 - Reflection of sound waves from different densities
 - Waves changing color when they hit objects
5. A communication company sends information using radio waves. Which statement explains why radio waves are used instead of light waves?
 - Radio waves can travel long distances and pass through some obstacles, unlike light waves.
 - Light waves move slower than radio waves, making communication slower.
 - Light waves cannot carry energy.
 - Radio waves produce sound that travels faster than light.

6. A student compares fiber optic cables to copper wires for transmitting data. Which statement is accurate?

- A) Fiber optic cables generate electricity from the light they carry.
- B) Copper wires transmit data faster than fiber optics using sound waves.
- C) Both fiber optic and copper wires transmit data using sound waves.
- D) Fiber optic cables use light waves to transmit data faster and with less loss than copper wires.

7. A sonar system on a submarine sends sound waves and measures the time for echoes to return. What property of waves is being measured to determine distance?

- A) Amplitude
- B) Wavelength
- C) Speed of the wave and time
- D) Color of the wave

Questions 8–10: Compare & Contrast Behavior of Sound and Light Waves (P .8.6.8)

8. Which statement correctly compares sound waves and light waves?

- A) Sound waves are longitudinal and require a medium; light waves are transverse and can travel in a vacuum.
- B) Sound waves are transverse and travel fastest in a vacuum; light waves are longitudinal and require air.
- C) Both sound and light waves are longitudinal and require a medium.
- D) Both sound and light waves are transverse and can travel through solids only.

9. A student shines light through a glass prism and simultaneously sends sound through a metal rod. Which difference in behavior will the student observe?

- A) Light bends (refracts) and separates into colors; sound does not refract visibly but travels faster in solids.
- B) Both light and sound bend into colors.
- C) Sound bends into colors; light travels straight through the prism.
- D) Both light and sound are absorbed completely by the materials.

10. A speaker produces sound waves in air while a flashlight emits light waves in the same direction. Which statement explains a key similarity between the two?

- A) Both are longitudinal waves
- B) Both require a medium to travel.
- C) Both can travel only in solids.
- D) Both transfer energy from the source to the surroundings.