

S8P4.d Describe how the behavior of waves is **affected** by medium (such as air, water, solids).

STANDARD REVIEW

Have you ever seen a cat's eyes glow in the dark when light shines on them? Cats have a special layer of cells in the back of their eyes that reflects light. This layer helps the cat see better by giving the eyes a second chance to detect the light. Reflection is one interaction of light waves with matter. Light travels in straight lines as long as the material that the light travels through doesn't change. So, a ray of light shining through air is usually straight. One way to change the direction of a light beam is by reflection. Reflection is the bouncing back of light rays when they hit an object. But light doesn't change directions randomly. Instead, it follows the law of reflection.

A wave is a disturbance in space that transfers energy from one place to another. There are many types of waves that travel through water, air, Earth, and even space. There are some properties that all waves have in common that can be used to explain how waves transfer energy. Think about how waves behave differently as they pass through different solids, through liquids (such as water), and through gases (such as air).



STANDARD PRACTICE

Directions Using the Standard Review and what you have studied, read each question and circle the letter of the best response. Use a separate sheet of paper to record your response to open-response questions.

- 1. Sound waves travel faster through liquid water than through air because**
 - A. water is hotter than air.
 - B. water is less dense than air.
 - C. the particles of the liquid transfer energy better than the particles in a gas.
 - D. the particles in the liquid vibrate more than the particles in a gas.

- 2. Refraction occurs when a wave enters a new medium at an angle because**
 - A. the frequency changes.
 - B. the amplitude changes.
 - C. the wave speed changes.
 - D. the new medium changes.

- 3. In what direction does your brain see light as traveling when it reflects off an object?**
 - A. in a straight line
 - B. in a wavy line
 - C. in a S-shaped line
 - D. in a curved line

- 4. Explain how the wave patterns produced when two waves of water meet are similar to the wave patterns produced when two rays of light interfere with each other.**

- 5. Some sunglasses are designed to let only light waves vibrating in the same direction to pass through the lenses. How would you design the lenses to permit this?**