

SCIENCE CONTENT TOPIC: Pa.5
SCIENCE PRACTICES: SP.1.a, SP.1.b, SP.1.c, SP.3.b, SP.7.a

1 Review the Skill

Knowing how to **link content from varied formats** will help you gain a complete understanding of the information presented. When elements such as text, illustrations, graphs, or diagrams are presented together, they may contain different but related information.

2 Refine the Skill

By refining the skill of linking content from varied formats, you will improve your study and test-taking abilities, especially as they relate to the GED® Science Test. Study the information and diagram below. Then answer the questions that follow.

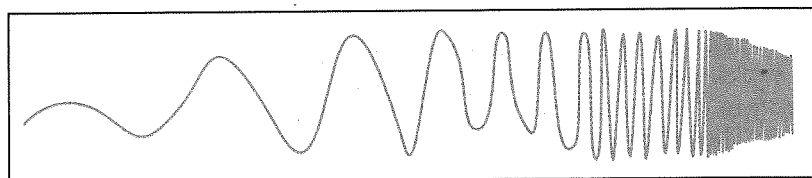
THE ELECTROMAGNETIC SPECTRUM

Electromagnetic waves differ from other types of waves because they can travel through empty space. The diagram shows the electromagnetic spectrum, which is made up of every type of electromagnetic wave. These types of waves have different properties because they have different amounts of energy. Amount of energy depends on wavelength. Waves with longer wavelengths have less energy than waves with shorter wavelengths.

a Text may give you information that is not in a graphic. In this case, the text tells you what the diagram includes.

b The diagram has information not found in the text: the different types of waves in the electromagnetic spectrum and their wavelengths.

Radio waves	Microwave	Infrared	Visible light	Ultraviolet	X-rays	Gamma rays
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Decreasing wavelength

TEST-TAKING TIPS

For a multiple-choice question that involves text and a graphic, check to make sure that your answer choice is supported by both the text and the graphic.

- Which electromagnetic waves have the most energy?
 - gamma rays
 - radio waves
 - microwaves
 - visible waves
- Which conclusion is supported by the information presented?
 - Radio waves cannot travel through empty space.
 - Visible light is not part of the electromagnetic spectrum.
 - Sound waves are electromagnetic waves.
 - Microwaves have less energy than infrared waves.

3 Master the Skill

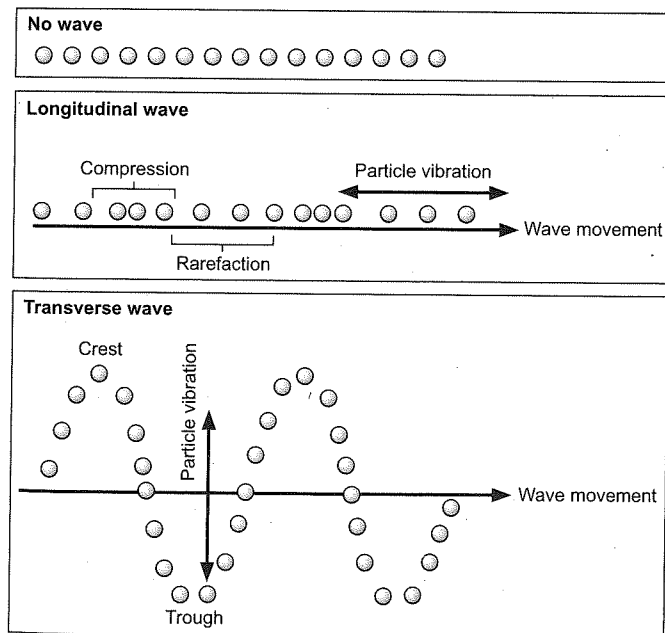
DIRECTIONS: Study the information and diagram, read each question, and choose the **best** answer.

SOUND AND LIGHT WAVES

When waves pass through a substance, they cause the particles in the substance to vibrate. Waves are classified by the direction in which they make the particles vibrate. The diagram shows the two main types of waves.

A longitudinal wave causes particles to vibrate in the direction that the wave moves. A transverse wave causes particles to vibrate perpendicular to the direction of the wave. A longitudinal wave is similar to a spring that is vibrating back and forth. Shaking a rope up and down can make a transverse wave in the rope.

Sound waves are longitudinal, and light waves are transverse. Longitudinal waves are made up of a repeating pattern of areas where the particles are squished together and areas where they are spread out. Transverse waves are made up of a repeating pattern of high and low points.



3. Which statement is supported by the information presented?
 - A. Rarefactions are found only in transverse waves.
 - B. Compressions are the areas in longitudinal waves where particles are farthest apart.
 - C. The vibrating particles in light waves form compressions and rarefactions.
 - D. Light waves can be characterized by their crests and troughs.
4. When a speaker produces a sound wave, what happens to the particles in air as the sound wave passes through that air?
 - A. Crests and compressions are formed in the air.
 - B. Where they are pressed together, the particles in the air form troughs.
 - C. The particles move back and forth perpendicular to the wave's direction.
 - D. The particles move back and forth in the same direction that the wave is moving.
5. The shaking felt during an earthquake is the result of movements within Earth's crust. These movements cause waves known as S and P waves. P waves shake the ground back and forth in a direction that is parallel to the direction of the wave. What type of waves are P waves?
 - A. longitudinal waves, because they form compressions and rarefactions
 - B. transverse waves, because they form compressions and rarefactions
 - C. longitudinal waves, because they form crests and troughs
 - D. transverse waves, because they form crests and troughs