

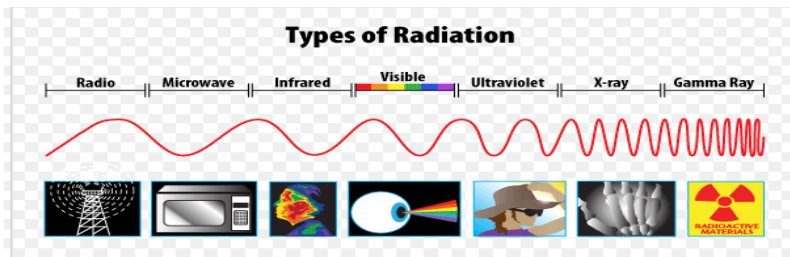
Study Guide – Waves – Part A

S8P4. Students will explore the wave nature of sound and electromagnetic radiation.

- a. Identify the characteristics of electromagnetic and mechanical waves.
- b. Describe how the behavior of light waves is manipulated causing reflection, refraction diffraction, and absorption.
- c. Explain how the human eye sees objects and colors in terms of wavelengths.
- f. Develop and use a model to predict and describe the relationships between wave properties (i.e. frequency, amplitude and wavelength) and energy.

1. Define Medium
2. Draw a transverse wave and label the crest, trough, amplitude, and wavelength, and baseline/line of origin
3. Draw a longitudinal wave and label the compression, rarefaction, and wavelength.
4. In what kind of wave do the particles move perpendicular to the energy flow?
5. In what kind of wave do the particles move parallel to the energy flow?

*Use this picture for #7-9



6. Which type of radiation above has the highest energy? Lowest energy?
7. Which type of radiation above has the longest wavelength? Shortest wavelength?
8. Which type of radiation above has the lowest frequency? Highest frequency?
9. Be able to put the EM waves in order with examples of how we use each wave.
10. Write the visible spectrum in order from low energy to high energy. Draw a wave and label with each color with the appropriate wavelength.

11. Know how to find wavelength and frequency.

12. How are frequency and energy related?

13. How are wavelength and frequency related?

14. How is amplitude and energy related?

15. 14. Be able to explain the similarities and differences between electromagnetic and mechanical waves.

Electromagnetic Waves	Same features of both	Mechanical Waves
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16. List all electromagnetic waves on one side and mechanical waves on the other.

Electromagnetic Waves	Mechanical Waves
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17. Explain how mechanical waves transfer energy from the source to a receiver. Include the word, “particle” in your response.

Draw a sound wave (Label all parts including compression, rarefaction, amplitude and show the direction of vibrations and the direction that the energy moves.)

What is the relationship between wavelength, frequency and speed?

Which properties of the wave below have changed? How (increased or decreased)?

