

Learning Target S8P4. I can identify, describe, and explain information about the properties of waves.

Properties of Waves Interactive Activity

Objective:

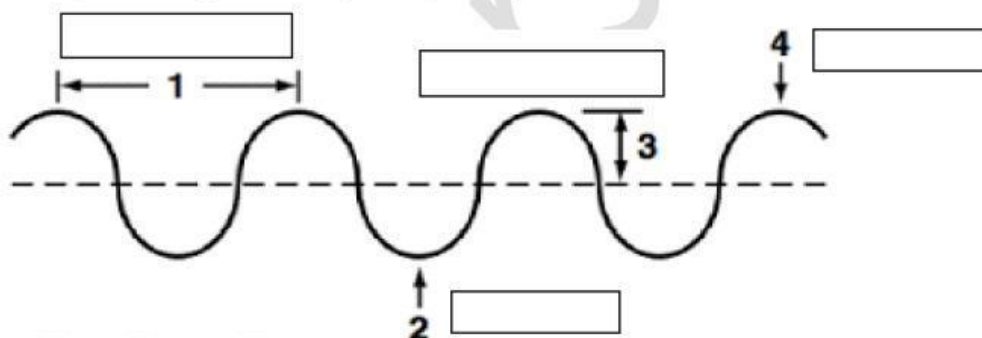
Students will identify, describe and explain the properties of waves.

Part 1: Vocabulary Match – Write the vocabulary word next to its correct definition.

Wavelength	Frequency	Amplitude	Resting position
Wave Speed	Crest	Trough	

- _____ The distance between two consecutive crests or troughs.
- _____ The number of waves that pass a given point in one second.
- _____ The height of the wave, measuring energy.
- _____ The top of the wave.
- _____ The bottom of the wave.
- _____ How fast a wave travels through a medium.
- _____ The undisturbed position of a wave.

Part 2: Diagram Labeling - Below is a diagram of a transverse wave. Label the following parts of the wave: (**Crest, Trough, Wavelength, Amplitude**)



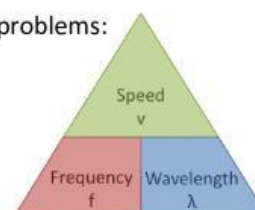
Part 3: Calculating Wave Properties - Use the formula sheet below to solve the problems:

Formulas:

Wave Speed = Wavelength $\times$ Frequency

Frequency = Wave Speed $\div$ Wavelength

Wavelength = Wave Speed $\div$ Frequency

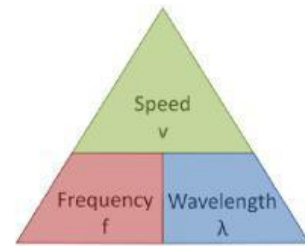
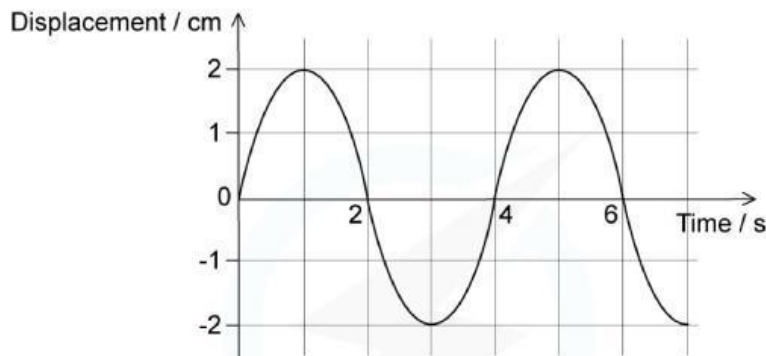


- A wave has a wavelength of 4 meters and a frequency of 3 Hz. What is its speed? _____
- A wave travels at 12 m/s and has a frequency of 2 Hz. What is its wavelength? _____
- A wave has a speed of 20 m/s and a wavelength of 5 meters. What is its frequency? _____

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Part 4: Graph Interpretation

The graph below shows a wave's displacement over time. Use it to answer the questions:



1. What is the wavelength of the wave? _____
2. What is the amplitude of the wave? _____
3. How many waves pass through the point in 5 seconds? (Hint: Count the crests.) _____
4. Calculate the frequency of the wave based on the graph. _____

Part 5: Real-World Application Read the scenario below and answer the questions:

Scenario: A sound wave travels through air at 343 m/s. Its frequency is 256 Hz.

1. What is the wavelength of the sound wave? _____
2. If the temperature changes and the wave speed increases to 350 m/s, what happens to the wavelength if the frequency remains constant? _____
Explain your reasoning. _____

Part 6: Reflection Questions - Answer the following questions in complete sentences:

1. How does amplitude affect the energy of a wave? _____
2. What is the relationship between frequency and wavelength when wave speed is constant? _____
3. Why do different types of waves (e.g., sound vs. light) travel at different speeds in the same medium? _____