

Learning Target S8P4. I will be able to describe, explain, and demonstrate wave behaviors, including reflection, refraction, diffraction, and interference, using visual aids and data charts.

Wave Behavior Interactive Activity

Objective:

Students will explore and analyze wave behaviors, including reflection, refraction, diffraction, and interference, using visual aids and data charts.

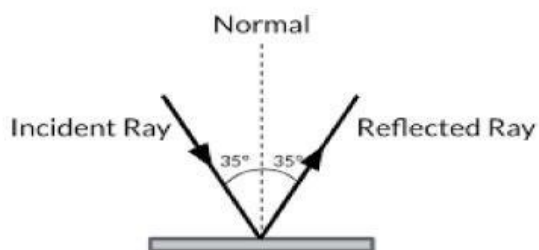
Part 1: Vocabulary Match – Write the vocabulary word next to its correct definition.

Reflection	Refraction	Diffraction	Interference
Medium	Amplitude	Wavelength	

- _____ The bending of waves as they pass through different mediums.
- _____ The distance between two consecutive wave crests.
- _____ The spreading of waves around barriers or through openings.
- _____ The bouncing back of waves when they hit a surface.
- _____ The height of a wave from its rest position.
- _____ The substance through which a wave travels.
- _____ The combination of two or more waves form a new wave pattern.

Part 2: Diagram Analysis

1. Reflection Study the diagram below and answer the questions:

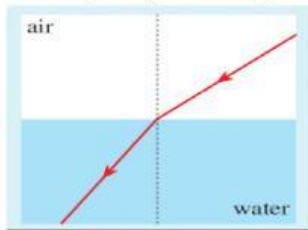


Questions:

1. What is the angle of incidence? _____
2. What is the angle of reflection? _____
3. Why do these angles appear equal? _____

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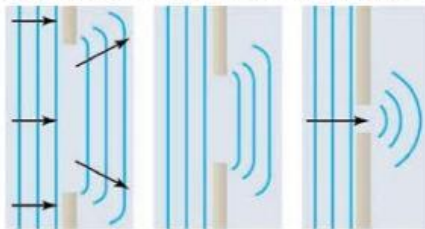
2. **Refraction:** Analyze the diagram showing a straw in a glass of water appearing bent.



Questions:

1. What happens to the speed of light as it enters water? _____
2. How does the bending of light explain why the straw looks bent? _____

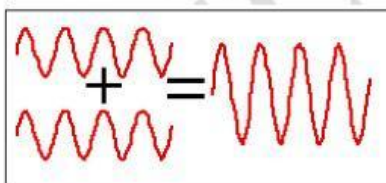
3. **Diffraction:** Observe the diagram of water waves bending around a rock.



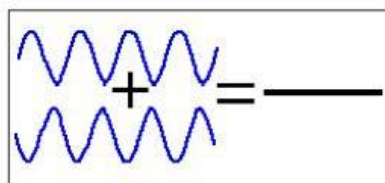
Questions:

1. What happens to the waves after they pass the rock? _____
2. How does the size of the barrier affect the diffraction pattern? _____

4. **Interference** Study the interference pattern of two water wave sources.



Constructive Interference



Destructive Interference

Questions:

1. What is constructive interference? _____
2. What is destructive interference? _____
3. How do these interactions affect the resulting wave? _____

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Part 3: Data Analysis

Wave Speed Calculation The table below shows the frequency and wavelength of waves in different mediums. Calculate the wave speed using the formula:

Where v is speed, f is frequency, and λ is wavelength.

Medium	Frequency (Hz)	Wavelength (m)	Speed (m/s)
Air	340	0.5	
Water	450	1.2	
Glass	500	0.3	

Questions:

1. Fill in the missing values for wave speed.
2. Which medium allows the wave to travel fastest? _____

Part 4: Experiment

Objective: Demonstrate wave behaviors using simple materials.

Materials: Bowl of water, flashlight, small rock, ruler.

Steps:

1. Create ripples in water using the rock and observe diffraction.
2. Shine the flashlight at an angle onto a mirror to observe reflection.
3. Place the flashlight in water and observe the bending of light.

Questions:

1. Describe what you observed during each activity.
 - A. _____
 - B. _____
 - C. _____
2. How did the experiments model real-world wave behavior? _____

