

Title: Are We on the Same Wavelength?

Link to Outcomes:

- **Problem Solving** Students will solve mathematics and science problems that encourage the use of cooperative learning, brainstorming, teacher demonstration, hands-on activities, and open-ended solutions.
- **Communication** Students will communicate mathematically through diagram and graph construction, as well as brief written descriptions explaining their thought processes.
- **Reasoning** Students will reason mathematically. They will predict, make generalizations based upon patterns they identify, manipulate data in order to make conclusions, and design an experiment to validate their own thinking.
- **Connections** Students will apply mathematical thinking and modeling to solve scientific problems.
- **Measurement** Students will select appropriate units in order to measure the degree of accuracy required in a particular situation. They will develop and manipulate formulas for determining measures to solve problems.
- **Patterns/ Relationships** Students will describe and represent relationships with graphs. They will use patterns to represent and solve problems.

Brief Overview:

This activity generates an elementary mathematical explanation for the scientific concept of waves. Students will experiment with the production of waves and their movement through various media, in order to discover the mathematical relationship among frequency, wavelength and velocity. They will use their findings to suggest a solution to a real-life situation that a working scientist might encounter.

Grade/Level:

Middle school math students (algebra not necessary)

Duration/Length:

This activity should take 3-4 class periods.

Prerequisite Knowledge:

- Students should be able to plot points on a Cartesian graph.
- Students should be able to multiply whole numbers and decimals.
- Students should be able to identify the inverse relationship between multiplication and division.