

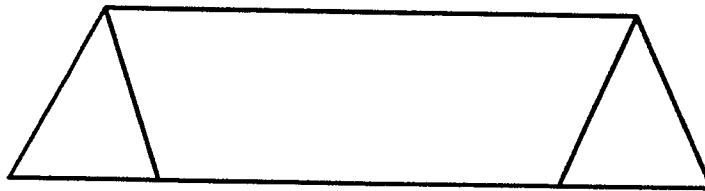
Teaching Activity: Prism Colors

Objective: To display the colors of the visible spectrum contained in sunlight.

Materials: Glass or plastic prism

Procedure:

- 1) Set the prism in a window with sunlight exposure. Sunlight will enter the prism and be dispersed in rainbow colors. (Sunlight will enter the prism at different angle depending upon the time of year.)
2. Observe the colors that appear on the floor/table.
 - a. Draw your observations below. Use **arrows** to show the direction of the light. **Color** in the different bands of light as they appeared.



b. Write a brief description of what you saw happen.

3. Answer the questions below in the space provided.

a) How is the dispersion of light in a rainbow after a thunderstorm like the dispersion of light using the prism? _____

b).What substance in the atmosphere probably acts like the glass or plastic in the prism? _____

c) Name some other human made and natural things that disperse sunlight.

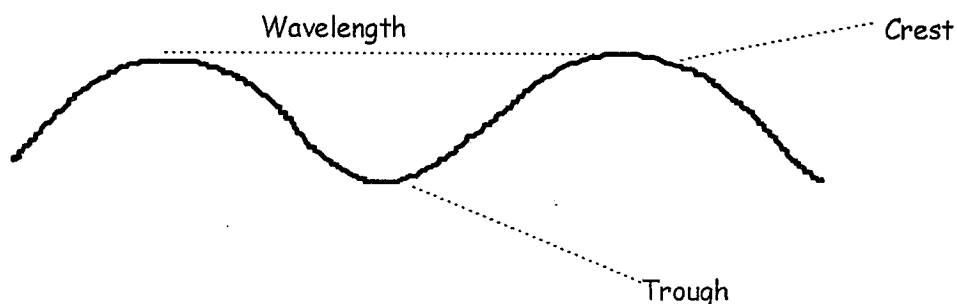
Teaching Activity: Wavelength and Energy

Objective: To demonstrate the relationship between wave frequency and energy in the electromagnetic spectrum.

Materials: A 50 foot length of rope

Procedure:

- 1) Have 2 students hold the stretched between them.
- 2) While one student holds his/her end of the rope still, have the other student shake the opposite end of the rope up and down at a moderate but steady rate.
- 3) Students should observe wave patterns created in the rope. Point out the parts of the wave (crest, trough).



- 4) Instruct students to estimate the wavelength (distance from crest to crest) and the frequency (number of waves reaching the far end of the rope each second).
- 5) Have students shake the rope faster.
 - a) Estimate the wavelength and the frequency.
- 6) Repeat #4 - 5 several times at different speeds.
 - a) Record their estimates on the Data Table.
- 7) Stop the activity and ask the student shaking the rope if it is easier to produce low frequency (long wavelength) or higher frequency (short wavelength) waves.

Note: High frequency (short wavelength) waves represent more energy than low frequency (short wave length) waves.

- 8) Answer the questions in the **Analysis and Comprehension** section.

Student Activity Sheet #1

ANALYSIS AND COMPREHENSION:

1. Measure and label the wavelengths in the diagrams below.

Diagram A.

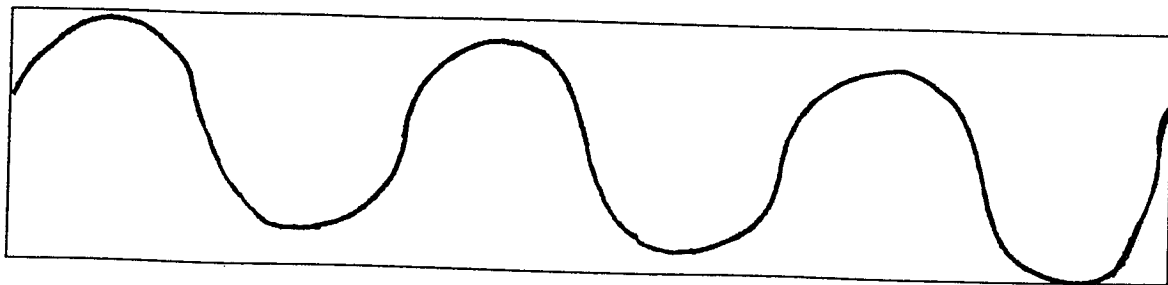
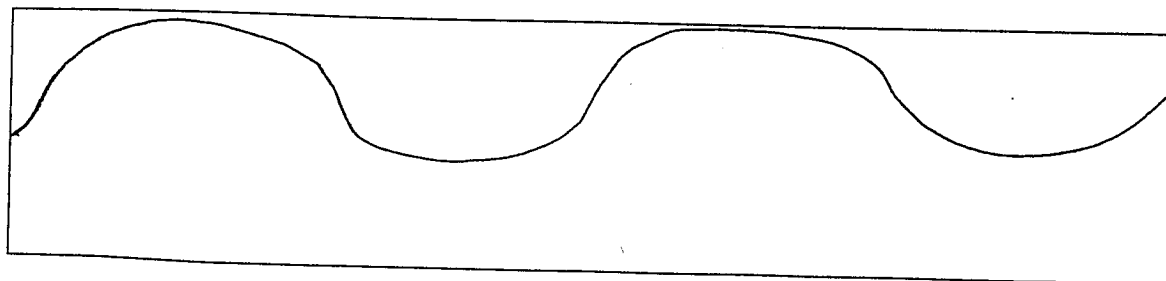


Diagram B:



2) What relationship do you see between wavelength and frequency?

3) Which type of wavelength (short/long) has a higher frequency of energy?

Extension:

- 1) Conduct the same activity again using a Slinky.
- 2) Make an overhead transparency of the spectrum chart provided. Discuss with students the relationship between energy and the electromagnetic wavelengths depicted.