

Unit 5 - Energy Movement

Activity 1 – Pulses on Springs

Part 1: Pulse Motion

Instructions:

1. Place a piece of colored tape near the middle of the spring so you have a reference point to refer to as you make observations.
2. Have two group members hold opposite ends of a spring stretched out along the floor.
3. Send a single wave pulse through the spring and observe.

Describe what you see in words.	Sketch your pulse. Label/identify any parts that you think are important.
Describe the motion of the colored piece of tape.	Describe the direction of energy transfer. How do you know?

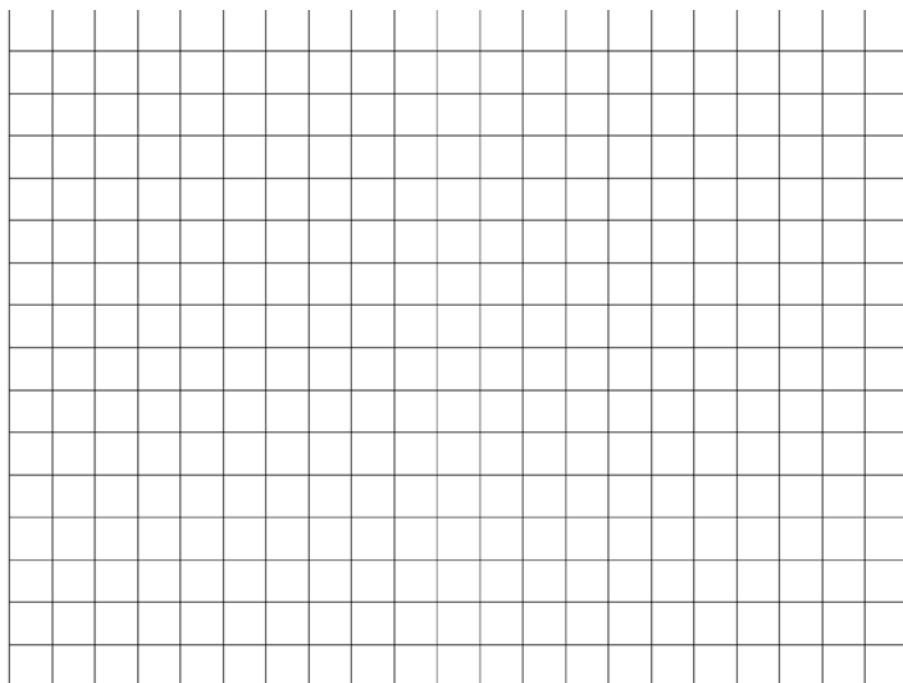
On your sketch above draw an arrow to represent the direction of the motion of the colored piece of tape and draw a second arrow to represent the direction of energy transfer. Be sure to label these arrows.

Use words to explain what your sketch above tells you about the direction of material motion and energy movement in a pulse.

Part 2: Pulse Speed

<u>Pulse Motion</u>	<u>Distance (m)</u>	<u>Time (s)</u>
½ trip (student 1 to student 2)		
1 round trip (student 1 back to student 1)		
1.5 trips		
2 round trips		
2.5 trips		
3 round trips		

Plot a graph of the distance the pulse traveled vs. the time it takes.



What does the shape of the graph tell you about the speed of the wave?

Part 3: Factors Affecting Pulse Speed

List each suggested change that the class has decided to test in the data table below. Predict which spring will win each race by circling Spring 1 or Spring 2. Perform the race with one suggested change at a time and circle which spring actually won.

Suggested Change	Predicted Winner:		Observed Winner:	
	Spring 1	Spring 2	Spring 1	Spring 2
	Spring 1	Spring 2	Spring 1	Spring 2
	Spring 1	Spring 2	Spring 1	Spring 2
	Spring 1	Spring 2	Spring 1	Spring 2
	Spring 1	Spring 2	Spring 1	Spring 2

List the factors that must be held constant.

Summarize the factors that affect the speed of a pulse.