**Science 8 – Waves on a String**

*Objective:* To use a graph to visualize the relationship between wavelength and frequency of a wave.

**Predicting:** What do you think a graph of wavelength vs. frequency will look like? Sketch it here (shape only, don’t worry about numbers).

**Conducting:** Use the “Wave on a String” simulation at <https://phet.colorado.edu/sims/html/wave-on-a-string/latest/wave-on-a-string_en.html> (If you Google “Phet Wave on a String” it should be easy to find.)

1. Set the simulation to:
	1. Oscillate
	2. No End
	3. Rulers
2. For at least 5 different values of frequency, pause and measure the wavelength. Record your results in a proper data table here (i.e. use a ruler, and have headings with units).

**Analyzing:**

1. On a separate piece of graph paper, make a proper graph showing your results, including a best-fit line to show the trend in your data.

**Evaluating:** Write a conclusion.

1. Summarize your results. Look back at your objective to remember what’s important.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. How could you expand or improve this lab? Be specific, and make sure it’s something YOU could potentially do (not something that would involve changing the simulation).

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Extra time?** Select one or more of the following questions to investigate with the simulations (or something else that you’d like to find out). Clearly show what you’ve found below.

1. How does changing the tension affect your wave?
2. How does changing the damping affect your wave?
3. What happens to your wave if you have a fixed end?
4. What happens to your wave if you have a loose end?