

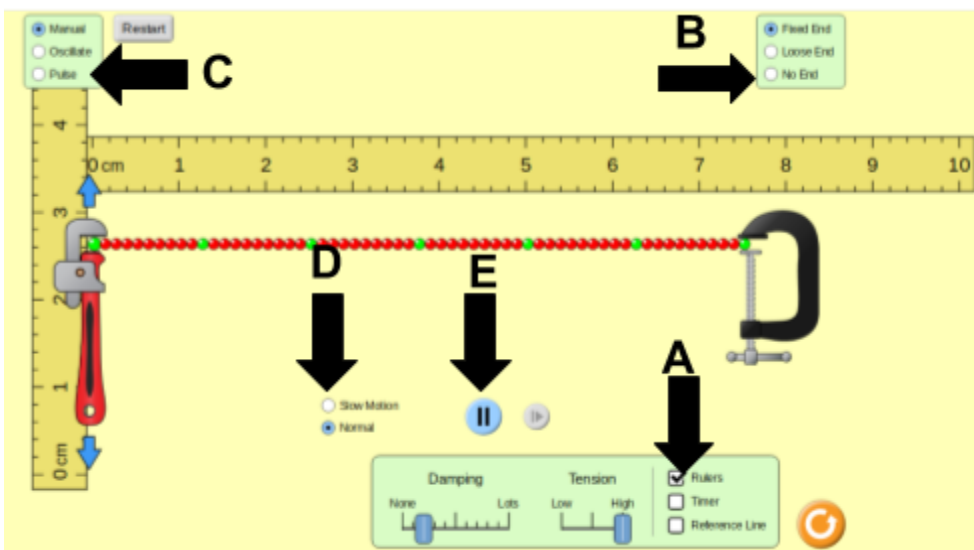
Name: _____

Date: _____ Period: _____

Wave on a String Lab

PART A: MANUAL

1. Go to the PhET simulation [Wave on a String](http://mrwadnizak.weebly.com). This is linked on my website(mrwadnizak.weebly.com).
2. Turn on the ruler and the reference line by clicking the box in the bottom right of the screen (A). Move the reference line so it is lined up red and green dots.



3. Change the End to **No End** (B).
4. SET: **Damping** = None **Tension** = low.
5. Move the wrench up and down to create waves.
6. Practice using the wrench to make a wave shape.
7. Pause the simulation to see your waves. Is it possible to measure them? Adjust the rulers if necessary.
8. Create a consistent wave with an **amplitude of about 1.0 cm**. Use the slow motion function if you need to. Practice until you get a good one.
9. Pause the simulation. **Draw and label** your wave below with all of the actual measurements. These may need to be an average of the waves you can see on the screen.
10. Keep the **amplitude** the same and try to increase the **frequency** of your wave.
11. Change the Damping slider to "Lots" as you make waves. Describe what happens to the wave. Play with the in between values, too. Change it back to **None** when you are done.

Date: _____ Period: _____

21. Measure the wavelength of the wave. Wavelength = _____ cm

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22. Change **ONLY** the amplitude.

Amplitude (cm)	Wavelength (cm)	Wave Drawing
0.25		
0.75		
1.25		

23. What effect did the change in amplitude have on the wavelength?

24. Change the amplitude back to 0.75 cm.

25. Change **ONLY** the frequency to:

Frequency (cm)	Wavelength (cm)	Wave Drawing
0.25		
1.50		
3.00		

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26. Based on this activity, what is the relationship between wavelength and frequency? Use detail and actual data from the lab.

Waves: Use visual and mathematical representations to model the properties of waves.

4 Highly Proficient	3 Proficient	2 Close to Proficient	1 Developing
<input type="checkbox"/> Lab is complete and includes detail. <input type="checkbox"/> Advanced knowledge of waves is shown. <input type="checkbox"/> <u>Actual data</u> is used as evidence to explain the relationship between wavelength and frequency.	<input type="checkbox"/> I can show strong understanding of the different properties of waves. <input type="checkbox"/> The lab is complete and answers are <u>mostly</u> correct. <input type="checkbox"/> My work is neat.	<input type="checkbox"/> I can show <u>some</u> understanding of the properties of waves. <input type="checkbox"/> Some of my information is <u>incorrect</u> . <input type="checkbox"/> My work needs more detail. <input type="checkbox"/> My work is <u>incomplete</u> . <input type="checkbox"/> My work is rough draft quality.	<input type="checkbox"/> I show <u>little to no</u> understanding of the properties of waves. <input type="checkbox"/> Not attempted or mostly incomplete.