Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Getting To Know Transverse Waves

Waves On A String Activity:

1. Open Safari
2. Go To “google.com”
3. Type “Waves On A String Simulation” into the search bar

### Click on the 1st link. It says, “[Wave on a String - Interference, Harmonic Motion, Frequency - PhET](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CC0QFjAA&url=http%3A%2F%2Fphet.colorado.edu%2Fen%2Fsimulation%2Fwave-on-a-string&ei=4P1VUqmcMYapyAHQv4H4Cw&usg=AFQjCNGDo1ZkVGXmWbG9e3F8hZ12Z-HorA&sig2=CINnchWr9ACfiXqdoxrKvQ" \t "_blank)”

### It should look like this:

###

### Click the Green Button that says, “Run Now!”

### It should look like this:

###

1. **PLAY AROUND WITH THE WRENCH, CLICK THE DIFFERENT OPTIONS ON THE SCREEN**
	1. **You will have 3 minutes to do your own thing with the simulation.**
2. **Click “Reset”**

Measuring Amplitude

1. Adjust the damping to 5
2. Click “No End”
3. Select the box that says, “Ruler”
4. Select the box that says, “Timer”
5. Select the box that says, “No End”
6. Click “Pulse”
7. Click “Pause”

It should look like this:



1. Use the ruler to measure the amplitude.
2. What is the amplitude of the wave?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Measuring Wavelength

Click “reset”

Click “oscillate”

Once the waves start to flow click “pause”

Measure the distance from equal parts of each wave

What is the wavelength?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

How many waves can you see in the wave train on the screen?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Measuring Frequency

Click “Oscillate”

Adjust the Frequency to 20

Click “reset”

Start the timer.

Count the number of waves (crests) that travel through the window.

Stop the timer at 10 seconds

How many waves traveled through the window in 10 seconds?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

What is the frequency of that wave? (number of waves / 10 seconds)????? Don’t forget your units!!!!!!!!!!\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Practice Calculating Amplitude and Wavelength**

Settings:(Oscillate, Damping 5, Frequency 50, No End) (Pause to measure)

|  |  |  |
| --- | --- | --- |
| Amplitude Setting | Measure Amplitude | Measure Wavelength |
| 100 |  |  |
| 50 |  |  |
| 10 |  |  |

**Calculating Frequency and Wavelength**

Settings:(Oscillate, Damping 5, Amplitude 50, No End) (Use the timer)(Pause to measure wavelength)

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency Setting | Time Interval | Number of Waves That Pass The Window | MeasuringWavelength |
|  Trial 1 Trial 2 Trial 3 |
| 20 | 10 seconds |  |  |  |  |
| 50 | 10 seconds |  |  |  |  |
| 70 | 10 seconds |  |  |  |  |

1. Use arrows, or draw on the wave, to show what will happen when the **amplitude** is increased:



Line of --origin------

1. Use arrows, or draw on the wave, to show what will happen when the **frequency** is increased:

 

Line of --origin------

Explain what happens to wavelength when frequency is changed….

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

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Explain to someone who has never seen a wave before how they would measure amplitude…

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Tell me about 3 different waves that you experience in your everyday life….

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