Name:

Objective: Explore transverse and longitudinal waves as well as examples of each.

Part 1: exploring amplitude and pulse waves

Background video: <https://www.youtube.com/watch?v=RVyHkV3wIyk>

|  |  |  |
| --- | --- | --- |
| Vocab | definition | image |
| **Amplitude**:  | energy a wave has.  |  |
| **Frequency**: | number of waves that pass by per second. |  |
| **Periods**:  | Length of time for a save to complete.  |  |
| **Wavelength**: | distance between two crests.  |  |
| **Crest/Trough:** | Crest=the ***highest*** point on a wavelengthTrough=the ***lowest*** point on a wavelength | Screen Shot 2017-09-14 at 9.31.43 AM.png |

**Instructions for measuring frequency, periods, and wavelength in a simulation:**

(click the link to open the simulation)

<https://phet.colorado.edu/sims/html/wave-on-a-string/latest/wave-on-a-string_en.html>

**Use the demonstrations below to help you measure the “period” and “wavelength”.**

Demonstration: Measuring the period. <https://www.youtube.com/watch?v=QRzSha78gPc>

Demonstration: Measuring the Wavelength: <https://www.youtube.com/watch?v=P-3PEbpIsww>

1. Select **oscillate**, **slow motion**, **timer**, and **rulers**.



1. Set the **amplitude** to 1 cm (This will **stay the same**).
2. Set **frequency** to .5Hz.



1. **Pause** ()the simulation when the **oscillator** is at the bottom of it’s cycle.
2. Click **play** ()on your **timer **. It should not start yet.
3. Click **play (**) to start the simulation. The waves and the timer will start.
4. Click **pause** () when the oscillator is back at the bottom of the cycle . This means you have made one wave. 
5. Use the **ruler (**) to measure wavelengths.
6. Record your data in the table below (a period is how long it takes to make one wave).

\*\*\*Repeat steps 1 - 9 for 1Hz, 2Hz, and 3 Hz (change the frequency **ONLY/**do **NOT** change the amplitude).\*\*\*

|  |  |  |
| --- | --- | --- |
| Frequency | Period (Unit=S) | Wavelength (Unit=Cm) |
| 1 Hz |  |  |
| 2 Hz |  |  |
| 3 Hz |  |  |

1. Based on observations, What is wavelength?
2. Based on observations, What is a period?
3. Based on observations, what is frequency?
4. Based on observations, What is the relationship between frequency in period. (compare and contrast). Give an example to defend your answer.
5. Based on observations, what is a question you still have about waves?