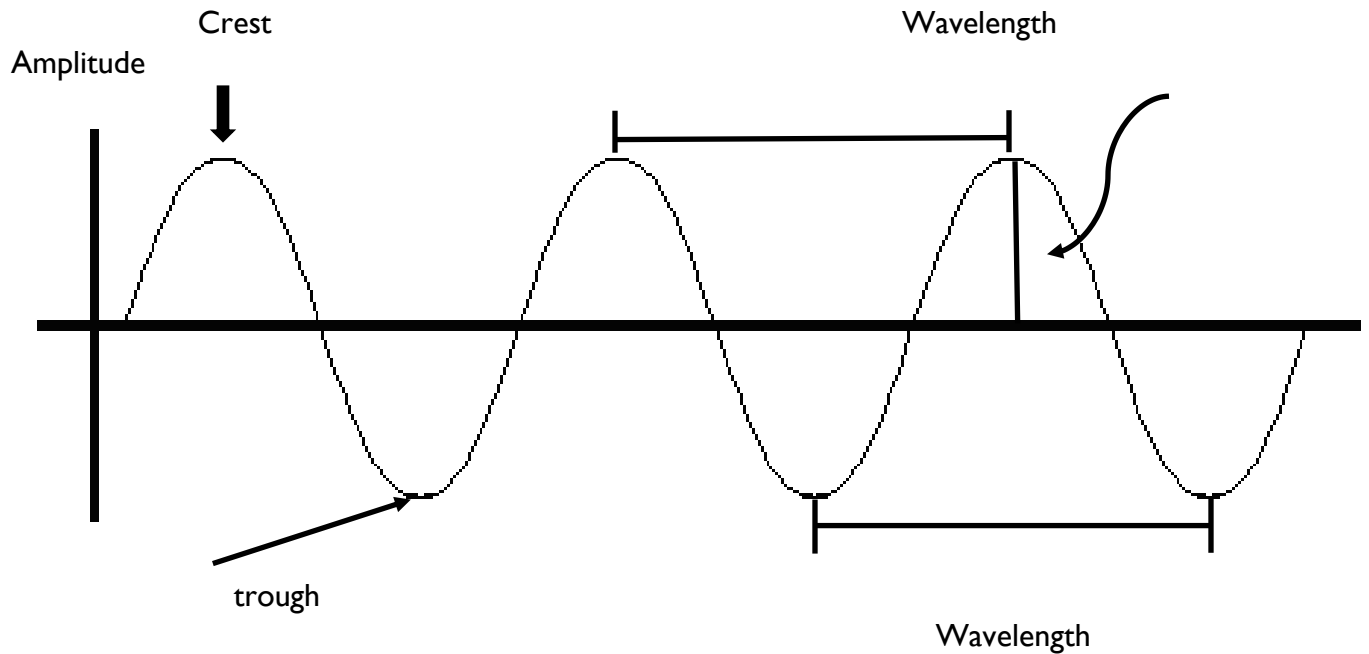


Name _____

Wave on a string

In class, you have been discussing mechanical waves. By this time, you should be familiar with the components of a wave labeled in figure one. In addition, this activity will allow you to understand the relationships between some of these components.



Students, please go to the following web page https://phet.colorado.edu/sims/html/wave-on-a-string/latest/wave-on-a-string_en.html

Important: Keep the setting on oscillate for the first four activities below.

Activity 1: Frequency and Wavelength

Does a wave's frequency affect the wavelength? Using the Phet simulation, you and your partner need to design an investigation that will allow you to answer that question. It is important that you only change one variable in your investigation so you can answer the question.

1. Hypothesis. How do you think a wave's frequency will affect the wavelength? Use your previous knowledge of waves to guide you.

2. In the space below, write the steps you will follow to answer the question: Does a wave's frequency affect the wavelength?

3. Create a data table to collect the information from your investigation in the space below.

4. Did your data support your hypothesis? If not, identify where you went wrong.



5. Based on your data, make a summative statement about how frequency affects wavelength.

Activity 2: Amplitude and Wavelength

Does a wave's amplitude affect the wavelength? Using the Phet simulation, you and your partner need to design an investigation that will allow you to answer that question. It is important that you only change one variable in your investigation so you can answer the question.

1. Hypothesis. How do you think a wave's amplitude will affect the wavelength? Use your previous knowledge of waves to guide you.

2. In the space below, write the steps you will follow to answer the question: Does a wave's amplitude affect the wavelength?



3. Create a data table to collect the information from your investigation in the space below.

4. Did your data support your hypothesis? If not, identify where you went wrong.

5. Based on your data, make a summative statement about how amplitude affects wavelength.

Activity 3: Frequency and Amplitude

Does a wave's frequency affect the amplitude? Using the Phet simulation, you and your partner need to design an investigation that will allow you to answer that question. It is important that you only change one variable in your investigation so you can answer the question.

1. Hypothesis. How do you think a wave's frequency will affect the amplitude? Use your previous knowledge of waves to guide you.



2. In the space below, write the steps you will follow to answer the question: Does a wave's frequency affect the amplitude?

3. Create a data table to collect the information from your investigation in the space below.

4. Did your data support your hypothesis? If not, identify where you went wrong.



5. Based on your data, make a summative statement about how frequency affects amplitude.

Activity Four: Wave amplitude over distance

1. Place the reference line, so it touches the top of the first wave. What do you notice about the amplitude of subsequent waves?

Why do you think that occurs?

2. Change the frequency. Does that have an effect on the wave amplitude over distance?

Activity Five: One wave

1. Choose either manual or pulse and fixed end on the simulation. Create a single wave. What happens when the wave reaches the clamp?

Why do you think this occurred?



I. Create several waves in quick succession. What do you notice about the phenomenon you observed during number one?

Why do you think this occurred?