

Name(s) _____, _____

Objectives:

- Calculate and measure different wave characteristics (frequency, period, amplitude, and wavelength).
- Describe the relationships among each of these wave characteristics

1. Open <http://www.colorado.edu/physics/phet/simulations/stringwave/stringWave.swf>
2. Play with simulation for 5 minutes. What things do you think change the wave shape?

3. In what ways is this similar to the wave demonstration with the slinky?



4. Now hit the “reset” button. Make the following changes:

- Change the option from Manual to Oscillate.
- Change the end from “fixed end” to “no end”.
- Set the damping to zero.

5. How does the amplitude affect the shape of the wave?

6. How does the frequency affect the shape of the wave?

7. You go to the beach on both days of the weekend. On Saturday, the weather is stormy and the waves are hitting the shore very frequently. On Sunday, the weather is calmer.

Draw the Saturday waves with high frequency, high amplitude	Draw the Sunday waves with low frequency, high amplitude
	

8. Check your answers on the next two questions before going on.
- Using the timer, how would measure the frequency of the wave in the simulation? Assume you don't know the number that you set it at.

b. How would measure the period of the wave in the simulation?

9. Keep the current settings:

- No end
- Hit reset
- Change damping to zero

Now find these quantities by filling in the table. Show your work if it requires a calculation. If you measured it, say that you measured it.

Wave property	Show work here (or say that you measured it):	Final answer (With correct unit!)
Frequency		
Period		
Wavelength		
Amplitude		

10. Keeping the wave on these settings, notice what happens to the green dots. As the wave travels forward (from left to right across your screen), what happens to the green dots? How do they move? (Focusing on just one dot at a time may help you figure this out.)

11. If this were a wave at the beach, how fast do you think the crests of the wave would be moving towards you? Calculate the speed of the crests using your method.

12. Play with the damping, frequency and amplitude. What additional observations do you make? List at least three. (Remember to change only 1 variable at a time, and control the rest of your variables!)