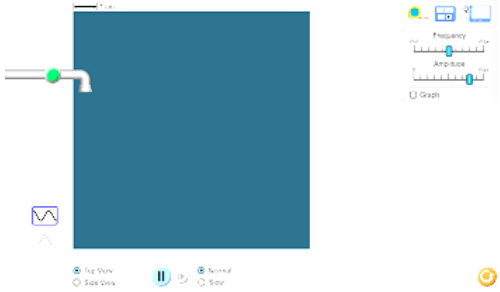
PhET Intro to Waves, Part I: Water

Name:	Period:
Date:	Assignment #:

Visit http://bit.ly/366gs80 & choose **Water.**

Click on the green button to turn on the water dropping into a container filled with water (default is a 'top view,' as if you were looking down on the container).

1. What does the dropping liquid create?



2. Describe what you see as the liquid continues to drop?

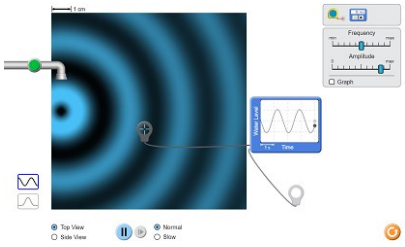
3. Increase and decrease the **amplitude setting.** What happens to the actual drops of liquid ***and*** the waves created as you increase and decrease the amplitude? (2 questions here)

4. What is amplitude, according to your textbook?

5. Increase and decrease the frequency setting. What happens to the actual drops of liquid ***and*** the waves as you increase and decrease frequency?

6. What is frequency, according to your textbook?

In the simulation, drag the wavemeter out of the toolbox. Drag either one of the (two) probes into the wave matrix as shown to the right.



7. Slide to increase and decrease the *amplitude.* Viewing the wavemeter, what happens to the waves on the meter? Sketch two examples below.

Low amplitude (not zero)	*High amplitude*

8. The size of the water droplets represents the amount of energy applied to create a wave. What kind of relationship (***direct***—increasing one increases the other, or ***inverse***—increasing one decreases the other) is there between the energy applied and the height of a wave? Explain.

9. While viewing the wavemeter, increase and decrease the *frequency.* What happens to the waves on the meter? Sketch two examples.

Low frequency (not zero)	*High frequency*

Analysis and conclusions

10. Think about comparing the wavelength to the frequency. What kind of relationship is there between wavelength and frequency? (*Direct* or *inverse*?) Explain what you observed to conclude this.

11. According to your textbook, in what units is frequency normally measured? Provide both the word and the one-letter abbreviation.

12. According to your textbook, what is the common unit for measuring wavelength? Provide both the word and the two-letter abbreviation.

13. What would be the mathematical relationship between wavelength and frequency? Use the abbreviations f for frequency and λ for wavelength.

14. What force is acting on the water that we can use to understand why water molecules in the peaks have more energy than water molecules in the troughs? Explain.

15. Flip back and forth between 'top view' and 'side view.' Based upon these two views, describe the shape of the water wave.

Honors Optional extension: The band of frequencies originally allocated to the "CB" service was around 27 MHz. It is also called the "11 meter band." Why might it be called this?