

Sound Lab using LabPro

Get a LabPro and microphone, and then connect to a computer. **Setup the Sensor** through the **Experiment** tab if necessary.

1. Say “AAAAAAAAA” smoothly into the microphone and hit **Collect**. Once you get a graph that you think is quality, copy it to a Word document and label it #1. Answer the following questions in your document.

- a) Would you say this is a periodic wave? Support your answer with characteristics.
- b) How many waves are shown in this sample? Explain how you determined this number.
- c) Relate how long the probe collected data to something in your everyday experience. For example: “Lunch passes by at a snails pace.” Or “Physics class flies by as fast as a jet by the window.”
- d) What is the period of these waves? Explain how you determined the period.
- e) What is the frequency of these waves? Explain how you determined the frequency.
- f) Calculate the wavelength assuming the speed of sound to be 340 m/s. Relate the length of the sound wave to something in the class room.
- g) What is the amplitude of these waves? Explain how you determined amplitude.
- h) What would be different about the graph if the sample were 10 times as long? How would your answers for the questions a-g change? Explain your thinking. Change the sample rate and test your ideas. Copy the graph and label it #1h.

2. Now have someone else in your group say “AAAAAA” into the microphone. Copy the graph and label it #2. Compare and contrast the two people’s wave patterns. Be specific in your answer. For example: determine the characteristics that you did for the first person (# of waves, frequency, period, amplitude, and wavelength) and include any qualitative observations.

3. Collect data for a tuning fork by striking it on a soft object. Copy the graph and label it #3. Compare and contrast the waves made by human voice.

4. If you use the same tuning fork to collect data for a sound that is not as loud, what changes would you expect on the display from the sample in #3? Test your ideas. Copy the graph and label it #4. What did you do to make the sound softer? Compare and contrast the waves collected for the louder sound.