Report Form: Sound

Attach your data record and lab notes.

Experiment 1:

Tuning Forks: Attach waveforms and FFT's for one frequency and show your measurements.

Rated Frequency (Hz)	Computed Frequency (Hz)	Wavelength in Air (m)

Attach waveforms and FFT's for tuning fork immediately after striking and after a delay.

Describe the differences between the two waveforms. Why are they different?

Experiment 2: Attach waveforms and FFT's of a tuning fork and your voice.

Describe and explain the differences and similarities you see. How do you measure the fundamental frequency on the original waveform? On the FFT?

Frequencies: f_{fork} _____ $f_{voice.}$ _____

Experiment 3: Attach FFTs and waveforms for a tuning fork, a string instrument, a percussion instrument, and a wind instrument. Compare the ratio of the fundamental frequency to higher frequencies for the wind instrument. Do the same for the string instrument. Explain how these results relate to your textbook's description of how these instruments produce sound. Also, compare the waveforms and the FFTs of either the wind or string instrument, to that of the percussion instrument. Describe how your answers above relate to whether a sound is harmonic or percussive.

Describe the waveform and FFT's for a hiss, snap, click or other nonmusical sound. What makes a sound melodious or nonmusical?

Now that you've seen how computers store information about a sound wave from an instrument, do your best to think of an explanation as to how electronic instruments can produce sounds. For example, how could you make an electronic drum? (More than one answer is possible)

Experiment 4: Attach your sound waveform for the beats experiment. Determine the experimental beat frequency (from Equation 3) and compare it to the theoretical value. Attach your labelled plot to illustate how you did your calculations.