Unit 8: Waves

**2.5 - Sound**

Determining Max and Min Audible Frequencies:

fmin = \_\_\_\_\_\_\_ Hz fmax = \_\_\_\_\_\_ Hz

Assuming that the speed of sound in air is 343 m/s, determine the max and min wavelengths

Λ min = \_\_\_\_\_\_ m Λ max = \_\_\_\_\_\_ m

Sound

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_ waves of pressure that stimulate our ear drums
* The speed of sound depends on its \_\_\_\_\_\_\_\_\_\_\_ (more dense 🡪 \_\_\_\_\_\_\_\_\_\_)

The Doppler Effect and Red Shift

* When we look at other galaxies we notice that their spectra (colours) are shifted toward the \_\_\_\_\_\_\_\_
* This is a result of a Doppler Shift of the EM Radiation towards a \_\_\_\_\_\_\_\_\_\_ wavelength
* Therefore the galaxies must be moving \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_ us.
* And so the universe must be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Now imagine that bug skimming along the surface of the pond.

The waves in back: The waves in front:

Imagine a water bug standing on the surface of a pond, bouncing up and down.

The Doppler Effect

Speed of Sound

Purpose:

Procedure:

Data:

Calculations:

1) Calculate our measured speed of sound.

2) The actual speed of sound can be found from the formula:

Vxound =331.4 + 0.6T

where T is the temperature in degrees Celsius. Find the actually speed of sound based on today’s forecasted temperature.

3) Calculate the percentage difference between our measure value and the actual value for the speed of sound.

4) There are many possible error associated with this lab. Show that the delay caused by the time of travel of the radio waves is negligible.