

Name: \_\_\_\_\_

Lesson 4.2 – Sound

Sound

- ☐ \_\_\_\_\_ waves of pressure that stimulate our ear drums
- ☐ The speed of sound depends on its \_\_\_\_\_ (more dense \_\_\_\_\_)
- ☐ Pitch is determined by \_\_\_\_\_
- ☐ Volume is determined by \_\_\_\_\_

Determining Max and Min Audible Frequencies:

$f_{\min}$ : \_\_\_\_\_ Hz       $f_{\max}$ : \_\_\_\_\_ Hz

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

$\lambda_{\min}$ : \_\_\_\_\_ m       $\lambda_{\max}$ : \_\_\_\_\_ m

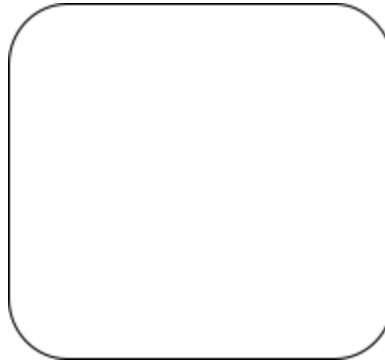
The Doppler Effect

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



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

The waves in back:



The waves in front:

## Speed of Sound Activity

Purpose:

Procedure:

Calculations:

- 1) Calculate our measured speed of sound.
- 2) The actual speed of sound can be found from the formula:  $V_{\text{sound}} = 331.4 + 0.6T$   
where T is the temperature in degrees Celcius. Find the actual speed of sound based on today's forecasted temperature.
- 3) Calculate the percentage difference between our measured value and the actual value for the speed of sound.
- 4) There are many possible sources of error associated with this lab. Which do you think are substantial, and which do you think are negligible?