Rotating Prelab 3:
Resonant Flame Tube

PHYS 1320
Fall 2019
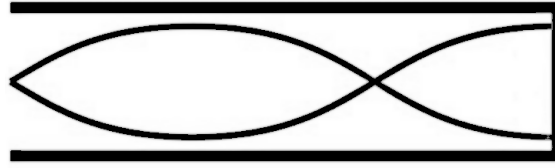*Due at the beginning of class.*

1) Consider the following table. Classify each entry as a solid, liquid or gas. Rank *only* the gasses based upon density. Compute the atomic mass of each gas in AMU, and sort according to mass. **What patterns do you observe?** Make detailed comments.

Speed of Sound in Various Substances

Substance	Temp. °C	Speed m/s	Speed ft/s	Classification	Density Rank	AMU	AMU Rank
Air	0	331.5	1087				
Air	20	344	1130				
Hydrogen	0	1270	4165				
Carbon Dioxide	0	258	846				
Water	15	1437	4714				
Steel	-	5000	16400				
Helium	20	927	3040				
Water Vapor	35	402	3120				

2) What is the atomic mass in AMU of CH_4, methane.

3) You are given the following *pressure* wave at $f = 140$Hz, in a tube of length $L = 2.4$m.

a) Find the wavelength and speed of sound in the tube.

b) Is the tube (i) open at both ends, or (ii) open at one end and closed at the other?

4) Fire will be used in today's lab. What are the two main precautions that the lab manual says should be taken?