

CHEMISTRY LAB DATA SHEET

NAME _____

Ideal Gas Law: Molar Mass of Lighter Fluid

PARTNER(S) _____
_____**Data Table 1**

Initial mass of lighter (g)	
Final mass of lighter (g)	
Mass of fluid used (g) $\text{mass}_{\text{initial}} - \text{mass}_{\text{final}}$	
Volume of full bottle (mL)	
Volume of water left in bottle (mL)	
Volume of gas (mL) $V_{\text{initial}} - V_{\text{final}}$	
Temperature ($^{\circ}\text{C}$)	
$P_{\text{H}_2\text{O}}$ (from table on back)	
P_{ATM} (from board)	
Pressure (mm Hg) $P_{\text{ATM}} - P_{\text{H}_2\text{O}}$	

14. Find the number of moles (n). Show all work.

15. Determine the molar mass of the gas in your lighter. Show all work.

16. Find the % difference between your molar mass and that of butane. Show all work.

17.

18.

Water Vapor Pressure at Various Temperatures

Temperature (°C)	Water Vapor Pressure (mm Hg)
15	12.8
16	13.6
17	14.5
18	15.5
19	16.5
20	17.5
21	18.6
22	19.8
23	21.0
24	22.4
25	23.8
26	25.2
27	26.7
28	28.3
29	30.0
30	31.8

Discussion:

What effect would each of the following errors have had on the value of the molar mass you calculated?

(H) Higher

(L) Lower

(NE) No effect

- _____ the lighter was not completely dry when weighed the second time
- _____ the pressure inside the bottle is 2 mm Hg higher than the room pressure
- _____ you forgot to correct the pressure for the vapor pressure of water
- _____ you forgot to change Celsius temperature to Kelvin temperature
- _____ there were air bubbles inside your bottle before you released the lighter gas into the bottle
- _____ you spilled some water out of the bottle before you measured it's volume
- _____ the difference in mass of the lighter before and after the experiment had only two significant figures