CHEMISTRY 1

EXPERIMENT # 24

NAME: _____

THE DENSITY OF A GAS

REPORT FORM

I. EXPERIMENTAL DENSITY OF CARBON DIOXIDE AT ROOM CONDITIONS

Mass of bottle filled with air: _____ g

Mass of bottle filled with carbon dioxide: 1st trial: _____ g
2nd trial: _____ g
3rd trial: _____ g
4th trial (if needed): _____ g

Mass of bottle filled with carbon dioxide, constant mass: _____ g

Volume of bottle: _____ L

Density of air (at room temperature and normal room pressure): 1.18 g/L

CALCULATIONS:

Calculate the **mass of air** in the bottle:

Volume of air: _____ L

Density of air: _____ g/L

Mass of air: _____ g

Calculate the **mass of empty bottle:**

Mass of bottle filled with air: _____ g

Mass of air: _____ g

Mass of empty bottle: _____ g

Calculate the **mass of carbon dioxide:**

Mass of bottle filled with carbon dioxide: _____ g

Mass of empty bottle: _____ g

Mass of carbon dioxide: _____ g

Calculate the **density of carbon dioxide:**

Mass of carbon dioxide: _____ g

Volume of carbon dioxide: _____ L

Density of carbon dioxide _____ **g/L**

(Room temperature: ____ ^{o}C; Atmospheric pressure: _____ mm Hg)

EXPERIMENT # 24

How does the density of carbon dioxide compare with the density of air? (which one is greater? How many times?

II. EXPERIMENTAL DENSITY OF CARBON DIOXIDE CORRECTED FOR S.T.P.

1. Calculate the **volume** of carbon dioxide at **S.T.P.**

Room Temperature:	_____ °C	Standard Temperature:	_____ °C
Room Temperature:	_____ K	Standard Temperature:	_____ K
Room Pressure:	_____ mm Hg	Standard Pressure:	_____ mm Hg
Volume:	_____ L	**Volume:**	_____ L

Show calculations below:

2. Mass of carbon dioxide: _____ g

3. Density of carbon dioxide at S.T.P. _____ g/L

III. CALCULATION OF PERCENTAGE ERROR

1. Calculate the **theoretical density** of carbon dioxide at STP:

Mass of 1 mole of CO_2: _____ g
Volume of 1 mole of CO_2 at STP: _____ L
Density of CO_2 at STP (theoretical): _____ g/L

2. **Experimental density** of carbon dioxide at S.T.P. _____ g/L

3. Percent Error: _____ %