FLINN SCIENTIFIC

Name_____

Lab Demo 1. Data Table

Part I: The Reactants

1. Number of moles of sodium bicarbonate _____ moles
2. Mass of sodium bicarbonate _____ grams
3. Molarity of the acid solution used _____ M
4. Moles of acid needed to react with all the moles of sodium bicarbonate being used (write the balanced chemical equation) _____ moles
5. Volume of acid solution needed (milliliters) _____ milliliters

Part II: The Volume of the Gas That Is Produced

1. Volume of gas collected under lab conditions _____ liters (V_1)
   a. Starting volume _____ liters
   b. Final volume _____ liters
2. a. Temperature of the gas collected (Celsius) _____ °C
   b. Temperature of the gas collected (Kelvin = °C + 273) _____ K (T_1)
3. a. Pressure of the atmosphere (inches of Hg) _____ inches of Hg
   b. Pressure of the atmosphere (mm = in × 25.4 mm/in) _____ mm of Hg
4. a. Temperature of the water in the eudiometer _____ °C
   b. Vapor pressure of water at this temperature (refer to the table below) _____ mm of Hg
5. Pressure of the dry gas collected _____ mm of Hg (P_1)

Convert the observed volume of the dry gas in the eudiometer to the volume under standard conditions (STP).

6. Volume of carbon dioxide gas collected under standard conditions (STP) _____ liters (V_2)
7. Moles of carbon dioxide gas expected (see the balanced chemical equation) _____ moles
8. Volume of carbon dioxide gas at STP, theoretical _____ liters
9. Percent error _____ %

Table 1. Vapor Pressure of Water at Different Temperatures

Temperature, °C	P_{H_2O}, mm Hg	Temperature, °C	P_{H_2O}, mm Hg
16	13.6	22	19.8
17	14.5	23	21.1
18	15.5	24	22.4
19	16.5	25	23.8
20	17.5	26	25.2
21	18.7	27	26.7

Lab Demo 2. Data Table

Part I: The Starting Material

1. a. Name of the substance used _____
   b. Chemical formula of the substance used _____
2. a. Initial physical state _____
   b. Probable initial temperature of the substance used _____ °C
3. Number of moles of the substance used _____ mole
4. Mass of the substance needed _____ grams
5. Mass of 50-mL Erlenmeyer flask _____ grams
6. Mass of 50-mL Erlenmeyer flask + mass of solid or liquid sample needed _____ grams

Part II: The Volume of the Gas That Is Produced

1. Name of the gas produced _____
2. Chemical formula of the gas that is produced _____
3. Volume of the gas collected under lab conditions _____ liters (V_1)
4. a. Temperature of the gas collected (Celsius) _____ °C
   b. Temperature of the gas collected (K = 273 + °C) _____ K (T_1)
5. a. Pressure of the atmosphere (inches of Hg) _____ inches of Hg
   b. Pressure of the atmosphere (mm = in × 25.4 mm/in) _____ mm of Hg
6. a. Temperature of the water in the overflow tank _____ °C
   b. Vapor pressure of water at this temperature (refer to the table below) _____ mm of Hg
7. Pressure of the dry_____ gas collected _____ mm of Hg (P_1)

Convert the observed volume of the dry gas in the eudiometer to the volume under standard conditions (STP).

8. Volume of the gas collected under standard conditions _____ liters (V_2)
9. Moles of gas expected _____ moles
10. Volume of gas at STP expected _____ liters
11. Percent error _____ %

Table 1. Vapor Pressure of Water at Different Temperatures

Temperature, °C	P_{H_2O}, mm Hg	Temperature, °C	P_{H_2O}, mm Hg
16	13.6	22	19.8
17	14.5	23	21.1
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19	16.5	25	23.8
20	17.5	26	25.2
21	18.7	27	26.7

Lab Demo 3. Data Table

Part I: The Reactants

1. Number of moles of metal _____ mole
2. Mass of active metal needed _____ grams
3. Mass of weighing dish _____ grams
4. Mass of weighing dish and active metal _____ grams
5. Molarity of the acid solution used _____ M
6. Moles of acid needed to react with all the moles of metal being used _____ moles
   (write the balanced chemical equation) _____ + _____ = _____ + _____
7. Volume of acid solution needed (milliliters) _____ milliliters

Part II: The Volume of the Gas That Is Produced

1. Name of the gas produced _____
2. Chemical formula of the gas that is produced _____
3. Volume of gas collected under lab conditions _____ liters (V_1)
4. a. Temperature of the hydrogen gas collected (Celsius) _____ °C
   b. Temperature of the hydrogen gas collected (Kelvin = °C + 273) _____ K (T_1)
5. a. Pressure of the atmosphere (inches of Hg) _____ inches of Hg
   b. Pressure of the atmosphere (mm = in × 25.4 mm/in) _____ mm of Hg
6. a. Temperature of the water in the overflow tank _____ °C
   b. Vapor pressure of water at this temperature _____ mm of Hg
   (Consult a reference book for this value)
7. Pressure of the dry hydrogen gas collected _____ mm of Hg (P_1)

Convert the observed volume of the dry gas in the eudiometer to the volume under standard conditions (STP).

8. Volume of hydrogen gas collected under standard conditions (STP) _____ liters (V_2)
9. Moles of hydrogen gas expected (see the balanced chemical equation) _____ moles
10. Volume of hydrogen gas at STP expected _____ liters
11. Percent error _____ %

Table 1. Vapor Pressure of Water at Different Temperatures

Temperature, °C	P_{H_2O}, mm Hg	Temperature, °C	P_{H_2O}, mm Hg
16	13.6	22	19.8
17	14.5	23	21.1
18	15.5	24	22.4
19	16.5	25	23.8
20	17.5	26	25.2
21	18.7	27	26.7