

Molarity Quiz #1

- 14) 1. What is the molarity of a solution that was prepared by dissolving 14.2 g of NaNO_3 in enough water to make 350 mL of solution?

$M = ?$

$$\frac{14.2 \text{ g NaNO}_3}{1} \times \frac{1 \text{ mol NaNO}_3}{84.99525 \text{ NaNO}_3} = \frac{.1671 \text{ mol}}{.350} = \boxed{0.477 \text{ M NaNO}_3}$$

- 4) 2. What is the molarity of 5.00 g of NaOH in 750.0 mL of solution?

$$\frac{5.00 \text{ g NaOH}}{1} \times \frac{1 \text{ mol NaOH}}{39.997345 \text{ NaOH}} = \frac{0.125 \text{ mol}}{.750 \text{ L}} = \boxed{0.167 \text{ M NaOH}}$$

- 4) 3. What is the molarity of a solution that contains 5.5 g of HCl dissolved in enough water to make 250 mL of solution?

$$\frac{5.5 \text{ g HCl}}{1} \times \frac{1 \text{ mol HCl}}{36.460945 \text{ HCl}} = \frac{0.15085 \text{ mol}}{.250 \text{ L}} = \boxed{0.603 \text{ M HCl}}$$

- 4) 4. How many grams of NaBr would be needed to prepare 700 mL of 0.230 M NaBr solution?

? g NaBr

$$\frac{.700 \text{ L}}{1} \times \frac{.230 \text{ mol NaBr}}{1 \text{ L}} \times \frac{102.8945 \text{ NaBr}}{1 \text{ mol NaBr}} = \boxed{16.56 \text{ g NaBr}}$$

5. A reagent bottle is labeled 0.450 M K_2CO_3 .

- 4) a) How many moles of K_2CO_3 are present in 45.6 mL of this solution?

$$\frac{.0456 \text{ L}}{1} \times \frac{.450 \text{ mol K}_2\text{CO}_3}{1 \text{ L}} = \boxed{.0205 \text{ mol K}_2\text{CO}_3}$$

- 4) b) How many milliliters of this solution are required to furnish 0.800 mol of K_2CO_3 ?

? mL

$$\frac{.800 \text{ mol K}_2\text{CO}_3}{1} \times \frac{1 \text{ L soln}}{.450 \text{ mol K}_2\text{CO}_3} \times \frac{1000 \text{ mL}}{1 \text{ L}} = \boxed{1,777.8 \text{ mL}}$$

- 12) e.c) If 50.0 mL of 0.450 M K_2CO_3 is added to enough water to make 125 mL of a diluted solution, what is the molarity of the diluted solution?

$$\frac{.050 \text{ L}}{1} \times \frac{.450 \text{ mol K}_2\text{CO}_3}{1} = \frac{0.0225 \text{ mol}}{.125 \text{ L}} = \boxed{0.18 \text{ molar K}_2\text{CO}_3}$$