



Chemistry

Name: _____

Section _____ CONCENTRATION: MOLARITY Date: _____

Concentration (molarity). Solve the following problems showing all work and unit cancellations.

1. What is the molarity of a solution in which 58.5 g of NaCl is dissolved in enough water to make 500. mL of solution?

2. What is the molar concentration of a solution made by adding enough water to 25.3 g KNO₃ to make 250 mL of solution?

3. How many grams of ammonia, NH₃, are required to make 1.50 L of a 0.250 M solution?

4. To what volume should 15 g of NaCl be diluted to prepare a 0.25 M solution?

5. How many grams of magnesium sulfate heptahydrate, MgSO₄·7H₂O, are required to prepare 100. mL of a 0.20 M solution?

Concentration (molarity). Solve the following problems showing all work and unit cancellations.

1. How many moles of H_2SO_4 are needed to prepare 5.0 liters of a 2.0 M solution of H_2SO_4 ?
2. What is the total number of grams of solute in 500. milliliters of 1.0 M CH_3COOH (formula mass = 60. g/mol)?
3. What is the molarity of a solution that contains 40. grams of NaOH in 0.50 liters of solution?
4. What is the molarity of a solution of KNO_3 (gram-formula mass = 101 g/mol) that contains 404 grams of KNO_3 in 2.00 liters?
5. What is the molarity of an H_2SO_4 solution if 0.25 liters of the solution contains 0.75 moles of H_2SO_4 ?
6. What is the total number of grams of NaOH (formula mass = 40. g/mol) needed to make 1.0 liter of a 0.20 molar solution?
7. What is the number of moles of solute contained in 0.50 liter of 3.0 M HCl ?
8. How many grams of KOH are needed to prepare 250. milliliters of a 2.00 M solution of KOH (gram formula mass = 56.0 g/mol)?
9. Which solution is the *most* concentrated? (Support your answer by calculating each molarity.)
 - a. 0.1 mole of solute dissolved in 400 mL of solution
 - b. 0.4 mole of solute dissolved in 100 mL of solution
 - c. 0.2 mole of solute dissolved in 300 mL of solution
 - d. 0.3 mole of solute dissolved in 200 mL of solution