Chemistry – Chapter 16 Book problems #2: Molarity, % solution, dilutions

1. A solution has a volume of 2.0L and contains 36.0 g of glucose ($C_6H_{12}O_6$). If the molar mass of glucose is 180g/mol, what is the molarity of the solution?

2. A solution has a volume of 250mL and contains 0.70 mol NaCl. What is its molarity?

3. How many moles of ammonium nitrate are in 335 mL of 0.425M NH_4NO_3?

4. How many moles of solute are in 250 mL of 2.0M $CaCl_2$? How many grams of $CaCl_2$ is this?

5. How many milliliters of a solution of 4.00M KI are needed to prepare 250.0 mL of 0.760M KI?

6. How could you prepare 250 mL of 0.20M NaCl using only a solution of 1.0M NaCl and water?

7. if 10 mL of propanone ($C_3H_6O_7$) is diluted with water in a total solution volume of 200 mL, what is the percent by volume of propanone in the solution?

8. A bottle of hydrogen peroxide (H_2O_2) is labeled 3.0% (v/v). How many mL H_2O_2 are in a 400.0 mL bottle of the solution?

9. Calculate the grams of solute required to make 250 g of 0.10% $MgSO_4$ (m/v)?

10. How do you calculate the molarity of a solution?

11. How does the number of moles of a solute before a dilution compare with the number of moles of solute after a dilution?

12. What are two ways of expressing the concentration of a solution as a percent?

13. What is the molarity of a solution containing 400 g $CuSO_4$ in 4.00 L of solution?

14. How many milliliters of a stock solution of 2.00 M KNO_3 would you need to prepare 100.0 mL of 0.150 M KNO_3?

15. How many moles of solute are present in 50.0 mL of 0.20 M KNO_3?

16. What is the concentration, in percent (v/v) of a solution containing 50 mL of $C_4H_{10}O$ in 2.5 L solution?

17. What mass of K_2SO_4 would you need to prepare 1500 g of 5.0% K_2SO_4 (m/m) solution?