

Determining Concentration of Solutions*Homework Unit 10 - Topic 4*

- A hydrated salt is a solid that includes water molecules within its crystal structure. A student heated a 9.10 gram sample of a hydrated salt to a constant mass of 5.41 grams. What percent by mass of water did this salt contain?
 - 3.69%
 - 16.8%
 - 40.5%
 - 59.5%
- How many moles of solute are contained in 200 milliliters of a 1 M solution?
 - 1
 - 0.2
 - .08
 - 200
- What is the total number of grams of $\text{NaI}_{(s)}$ needed to make 1.0 liters of a 0.010 M solution?
 - 0.015
 - 0.15
 - 1.5
 - 15
- What is the molarity of a solution containing 20 grams of NaOH in 500 milliliters of solution?
 - 1 M
 - 2 M
 - 0.04 M
 - 0.5 M
- What is the concentration of a solution, in parts per million, if 0.02 grams of Na_3PO_4 is dissolved in 1000 grams of water?
 - 20 ppm
 - 2 ppm
 - 0.2 ppm
 - 0.02 ppm
- If 0.025 grams of $\text{Pb}(\text{NO}_3)_2$ is dissolved in 100. grams of H_2SO_4 , what is the concentration of the resulting solution, in parts per million?
 - 2.5×10^{-4} ppm
 - 2.5 ppm
 - 250 ppm
 - 4.0×10^3 ppm
- Molarity is defined as
 - moles of solute per kilogram of solvent
 - moles of solute per liter of solution
 - mass of a solution
 - volume of a solvent
- How many total moles of KNO_3 must be dissolved in water to make 1.5 liters of a 2.0 M solution?
 - 0.50 mol
 - 2.0 mol
 - 3.0 mol
 - 1.3 mol
- In the space provided below, show a correct numerical setup for determining how many liters of a 1.2 M solution can be prepared with 0.50 moles of $\text{C}_6\text{H}_{12}\text{O}_6$.

Name: _____

Date: _____

10. What is the gram-formula mass of ethylene glycol, $C_2H_4(OH)_2$?

11. Show a correct numerical setup for calculating the total number of moles of ethylene glycol needed to prepare 2.50 liters of a 10.0 M solution.

Base your answers to questions 12 through 14 on the information below:

A student is instructed to make 0.250 liters of a 0.200 M aqueous solution of $Ca(NO_3)_2$.

12. What is the gram-formula mass of $Ca(NO_3)_2$?

13. In the space provided, show a correct numerical setup for calculating the total number of moles of $Ca(NO_3)_2$ needed to make 0.250 liters of the 0.200 M calcium nitrate solution.

14. In order to prepare the described solution in the laboratory, two quantities must be measured accurately. One of these is the volume of solution. What other quantity must be measured to prepare this solution? _____
