

Worksheet (Molarity)

1. Calculate the molarity, M, of the following solutions:
 - a. 3.0 moles of NaCl are dissolved in 1 liter of solution.
 - b. 0.5 moles of MgF_2 are dissolved in 2 liters of solution.
 - c. 3 moles of NaOH are dissolved in 0.25 liters of solution.
2. How many liters of a 4.0 M CaCl_2 solution would contain 2 moles of CaCl_2 ?
3. How many liters of a 0.5 M CaCl_2 solution would contain 3.5 moles of CaCl_2 ?
4. How many liters of a 2.5 M CaCl_2 solution would contain 1.0 mole of CaCl_2 ?
5. How many moles of KCl are there in 2 liters of a 3.0 M solution?
6. What is the molarity, M, of a solution in which 116 grams of KF are dissolved in 2 liters of solution?
7. How many grams of KF are in 2 liters of a 3.0 M solution of KF? What is the $[\text{CaF}_{2(\text{aq})}]$ of a solution when 39 g of CaF_2 are dissolved in enough water to make 2200 mL of solution? ([] is how chemists say concentration or molarity)
8. How many grams of NH_3 are dissolved in 85 mL of a 0.75 M solution?

Worksheet: Concentration (Dilutions)

1. 25 mL of 5.6 M HCl are placed in a volumetric flask. The flask is filled to 250 mL with water. What is the molarity of the new solution?
2. 5.6 mL of NaOH are added to a flask and the flask is filled with water to the 200 mL mark. The concentration of the new solution is found to be .098 M. What was the initial molarity of the solution before the dilution was completed?
3. A chemist has 300 mL of a 2.5 M KCl solution. The solution is diluted by **adding** 1.2 L of water to the original volume. What is the [KCl] of the diluted solution?
4. A chemist has 2 liters of a 3.2 M hydrochloric acid solution. If the solution is left out in the room and enough water evaporates so that there is only 1.2 liters of solution left, what is the final molarity of this concentrated acid?
5. When a chemist **adds** 1.0 L of water to 3.0 liters of a 0.8 M HF solution, what is the new concentration of the total HF solution?
6. How much water will a chemist need **to add** to 200 mL of a 3.3 M KCl solution if they want to make a 1.0 M solution of KCl?