

Molarity Review Problems

- **Calculating the molarity of a solution**

1. Calculate the molarity of a solution made by dissolving 20.631 g $\text{Ca}(\text{NO}_3)_2$ in enough water to make 475mL of solution.

2. Calculate the molarity of a solution made when 8.956 g NaCl is dissolved in enough water to make 200mL of solution.

3. If a K_2CO_3 solution has a molarity of 3.00, what is the molarity of the K^+ in the solution?
(Remember that the K_2CO_3 dissociates in solution, how many K^+ are there for each K_2CO_3 ?)

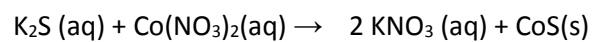
- **Using Molarity as a conversion factor.**

4. How many moles of NaCl are there in a 45.00mL sample of 2.50M NaCl solution?

5. What volume (liters is fine) of a 3.59M solution of LiCl contains 5.00 moles of LiCl?
6. What is the mass of $\text{Mg}(\text{NO}_3)_2$ that is contained in a 26.5mL sample of .25M $\text{Mg}(\text{NO}_3)_2$ solution?
7. I need 4.67 g of CsBr for a reaction. I found a bottle of CsBr solution in the stock room that has a concentration of 0.358M. How many mL of the solution do I need?
8. An industry wants 15.00 L of a 4.25M solution of NH_4NO_3 . How many grams of NH_4NO_3 are needed to make the solution?

- **Molarity in stoichiometry.**

9. Consider the reaction:

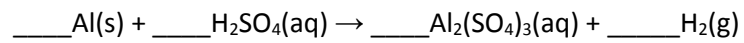


What volume of .750M K_2S is needed to form 5.00g of CoS ?

If you used the amount of K_2S you calculated above, but only recovered 3.98g of CoS instead of the 5.00 g you thought you would make, what is the percent yield of the reaction?

10. Use the reaction in the problem above to answer the following question. If I want to react 50.0mL of .95M $\text{Co(NO}_3)_2$ completely, what volume of .465M K_2S solution would I need?

11. What volume of 6.0M H₂SO₄ is needed to react with 14.20g of Aluminum in the following reaction?



12. Using the reaction above, how many grams of H₂ will I form if I combine 3.58g Al with 50mL of .450M H₂SO₄?