Name _____ Date _____

Molarity problems

1. C_{12} = _____ ml.
2. Calculate the molarity of the following solutions:
   a. 1.5 g of Na_2O_2 dissolved in water to make 250 mL of solution.

   $\frac{1.5\,g}{1\,mol} \times \frac{1\,mol}{1.08\,g} = .026\,mol$ $\quad M = \frac{.026\,mol}{.25\,L} = \boxed{.104\,M}$

   b. 0.1 g of Na_2O_2 dissolved in water to make 150 mL of solution.

   $\frac{.1\,g}{1\,mol} \times \frac{1\,mol}{1.40\,g} = .01\,mol$ $\quad M = \frac{.01\,mol}{.15\,L} = \boxed{.067\,M}$

3. How many moles of $AlCl_3$ are in 100 mL of a 0.5 M solution?

   $0.5\,M = \frac{mol}{.1\,L}$ $\quad mol = \boxed{.05\,mol\ AlCl_3}$

4. How many moles of $Ca(OH)_2$ are in 25 mL of 0.5 M solution?

   $.5\,M = \frac{mol}{.025\,L}$ $\quad mol = \boxed{.0125\,mol\ Ca(OH)_2}$

5. A reaction calls for the use of 5 Mmol of NH_4OH. Purchase a bottle of 0.5 M NH_4OH. How many millions of the solution should you add?

   $.5\,M = \frac{5\,mol}{x}$ $\quad x = 2.333\,L = \boxed{2333\,mL}$

6. A reaction calls for the use of 0.5 M and 0.1 O_2. You have a bottle of 0.5 M O_2. How many mL should you add?

   $.1\,M = \frac{.33\,mol}{x}$ $\quad x = 2.3\,L$ or $\boxed{2300\,mL}$

7. How many moles $KClO_3$ are in 30 mL of a 0.1 M solution? How many grams?

   $.1\,M = \frac{mol}{.03\,L}$ $\quad mol = \boxed{.003\,mol\ KClO_3} \times \frac{122.55\,g}{1\,mol} = \boxed{1.368\,g}$

8. A lab procedure calls for the use of 100 mL of 0.5 M KOH. How many grams of KOH should you add to solution to make this solution?

   $.5\,M = \frac{mol}{.1\,L}$ $\quad \frac{.05\,mol\ KOH}{} \times \frac{56.4\,g}{1\,mol} = \boxed{2.81\,g\ KOH}$