**Concentration Calculations: Molarity**

* First, copy the formulas for **molarity** and **number of moles** from your reference table:

|  |  |
| --- | --- |
| Molarity = | Number of moles = |

* Use the formulas above to solve the following problems. As you work through each problem, remember these tips:
  + The amount of solute must be in moles to plug into the molarity formula. If it is given in grams, convert to moles using the “number of moles” formula.
  + The volume of solution must be in L to plug into the molarity formula. If it is given in mL, you must convert.
  + Once variables are in the correct units, write the formula, plug in values, and solve for x.

1. What is the molarity of a solution in which 58 g of NaCl are dissolved in 1.0 L of solution?
2. What is the molarity of a solution in which 10.0 g of AgNO3 is dissolved in 500 mL of solution?
3. How many grams of KNO3 should be used to prepare 2.00 L of a 0.500M solution?
4. To what volume should 5.0 g of KCl be diluted in order to prepare a 0.25 M solution?

Use the formulas for molarity and moles to complete the missing values in the table below.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Substance** | **Name** | **GFM** | **Grams of solute** | **Moles of solute** | **Volume of solution** | **Molarity** |
| C6H12O6 | glucose | 180.0 | 75 |  | 0.300 L |  |
| NaCl |  |  | 100. |  |  | 8.00 |
| MgCl2 |  |  |  | 0.525 | 164 mL |  |
| HCl |  | 36.5 |  | 1.23 |  | 6.00 |
| NaOH |  |  | 15 | 0.375 |  | 2.4 |
| Fe(NO3)2 |  | 179.8 | 75 |  | 556 mL |  |
| Fe(NO3)3 |  |  |  |  | 0.382ml | 0.65 |

Work Space: (You may also use a piece of scrap paper for your work.)