

Notes 10-31-17 More Concentration Units

- Which is solute? (dissolve into solvent)

- ① Will be (s) or (g) dissolving into liquid
- ② If same phase, solute = less mass

ex) Air - 80% N<sub>2</sub> — solvent  
          19% O<sub>2</sub> — solute  
                            > by mass

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50g Ag solvent	+	40g Cu solute	
25g HCl(g) solute		20g H <sub>2</sub> O(l) solvent	<u>MgSO<sub>4</sub></u>
20g H <sub>2</sub> O(l) solute		30g Ethanol(l) solvent	

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ex) You add 30g NaCl to 200. mL H<sub>2</sub>O  
Final volume: 209.5 mL      200. g H<sub>2</sub>O

① Total mass of solution: 30g NaCl + 200. g H<sub>2</sub>O  
: 230g total

② Density of Solution =  $\frac{\text{total mass (g)}}{\text{total volume (mL)}} = \frac{230\text{g}}{209.5\text{mL}}$

1.10 g/mL

$$\textcircled{3} \quad \boxed{\% \text{ Solute by Mass}} = \frac{\text{grams solute}}{\text{total grams solution}} = \frac{\text{g NaCl}}{\text{g NaCl} + \text{g H}_2\text{O}} \times 100$$

$$\textcircled{4} \quad \text{Molarity} = 30. \text{g} \left( \frac{1 \text{ mol}}{58.44 \text{ g}} \right) = 0.51 \text{ mol} \quad \frac{0.51 \text{ mol}}{0.2095 \text{ L}} = 2.4 \text{ M NaCl}$$