# Solutions – 1 % Solutions.

1) * * What is the percent by mass of glucose in a solution made by dissolving 163 g glucose in 755 g ~~glucose~~ water? (Do you need formula for glucose?).

$$\left(\frac{163\text{ g glucose}}{163\text{ g glu} + 755\text{ g } H_2O}\right) \times 100\% = 17.8\%\text{ by mass}$$

2) * How would you prepare a 750 g aq. soln of 2.5% ~~NaOH~~ NaOH?

$$750\text{ g solution} \times \frac{2.5\text{ g NaOH}}{100\text{ g solution}} = 19\text{ g NaOH}.$$

amt of water = 750 g soln − 19 g NaOH.
= 731 g $H_2O$.

19 g NaOH + 731 g $H_2O$

3) * What is the volume percent toluene, $C_6H_5CH_3$, in a soln made by mixing 40.0 mL toluene in 75.0 mL benzene, $C_6H_6$?

$$\left(\frac{40.0\text{ mL}}{(40.0 + 75.0)}\right) \times 100\% = 34.8\%\text{ toluene}.$$

4) * Ethanol has a density of 0.813 g/mL. What is the mass % ethanol in a 95% ~~by~~ vol/vol solution? (den. Eth. = 0.789 g/mL)

Assume 100 mL

$$100\text{mL} \times \frac{0.813\text{ g}}{1\text{ mL}} = 81.3\text{ g soln}.$$

$$\text{g of ethanol} = 100\text{mL soln} \times \frac{95\text{ mL eth}}{100\text{mL soln}} \times \left(\frac{0.789\text{ g}}{1\text{ mL}}\right) = 75\text{ g Eth}.$$

$$\frac{75\text{ g Ethanol}}{81.3\text{ g soln}} \times 100\% = 92.3\%$$