

$$\frac{g}{mL} \frac{m}{V} \%$$

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$$\frac{mL}{mL} \frac{V}{V} \%$$

%
multiplying
by
100

4. mL? 6.6% 25.00g

$$\frac{m}{v} \times 100 = 6.6\%$$

$$\frac{m}{v} = .066$$

$$\frac{25.00g}{x} = \frac{0.66}{1}$$

$$\frac{25.00g}{.066} = \frac{x(.066)}{.066}$$

$$X = 378.77 \text{ mL}$$

$$x = 380 \text{ mL}$$

13. % M 33.0g

0.200 L

$$\frac{33.0g}{200mL} \times 100 = 16.5\%$$

↗
total solution

$$M = \frac{\text{moles of solute}}{L \text{ of solution}}$$

$$\frac{33.0g \times 1 \text{ mol}}{180g} = 0.183\bar{3} \text{ mol}$$

$$C_6 \quad 12 \times 6 = 72$$

$$H_{12} \quad 1 \times 12 = 12$$

$$O_6 \quad 16 \times 6 = 96$$

$$180g = 1 \text{ mol}$$

$$\frac{0.1833 \text{ mol}}{0.200 \text{ L}} = 0.9165 \text{ M (Molarity)}$$

0.917 M (Molar)

3 grams? 2,250 mL
4.5 M

$$4.5 = \frac{x}{2.250}$$

$$x = 10.125 \text{ mol}$$

$$\text{Na } 23 \times 1 = 23$$

$$\text{Cl } 35.5 \times 1 = 35.5$$

$$58.5 \text{ g/mol}$$

$$\frac{10.125 \text{ mol} \times 58.5 \text{ g}}{1 \text{ mol}} = 592.3125 \text{ g}$$

$$590 \text{ g}$$

9. x mL 4.5% 25.0g KCl

$$0.045 = \frac{25.0\text{g}}{x}$$

$$0.045(x) = 25.0\text{g}$$

$$x = 555.55 \text{ mL}$$

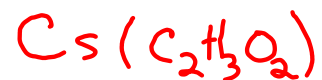
$$x = 560 \text{ mL}$$

1. 250.0 mL 0.76 M
?g

$$0.76 \times \frac{x}{0.250}$$

$$(0.76)(0.25) = x$$

$$x = 0.19 \text{ mol}$$



$$\text{Cs } 133 \times 1 = 133$$

$$\text{C } 12 \times 2 = 24$$

$$\text{H } 1 \times 3 = 3$$

$$\text{O } 16 \times 2 = 32$$

$$\hline 192 \text{ g/mol}$$

$$\frac{0.19 \text{ mol} \times 192 \text{ g}}{1 \text{ mol}} = 36.48 \text{ g}$$

$$36 \text{ g}$$

16. % M 25.0g 250mL

$$\frac{25.0\text{g}}{250\text{mL}} \times 100 = 10\%$$

10.0%

$1.0 \times 10^1\%$

16. % M 25.0g 250_{ml} $\swarrow \div 1000$

$$M = \frac{\text{moles of solute}}{\text{L of soln}}$$

Na 23

Cl 35.5

58.5

$$\frac{25.0g \times 1 \text{ mol}}{58.5g} = 0.42735 \text{ mol}$$

$$\frac{0.42735 \text{ mol}}{0.250 \text{ L}} = 1.7094 \text{ M}$$

1.7M

Test

- ① Gas Laws $PV = nRT$
② Solutions $\frac{P_1 V_1}{T_1} = \frac{P_2 V_2}{T_2}$

M, %, Dilutions

- ③ Solvent Solute
"Like Dissolves like"

Show how they
④ dissolve in H_2O !
Naming

Dilutions

$$M_1 V_1 = M_2 V_2$$

$$\%_1 V_1 = \%_2 V_2$$



Do not divide by 100.

Do this when you have
two Ms or % or two volumes

14 15.0mL 12.3%

With 100.0mL ?%

$$(12.3)(15.0) = x(115)$$

$$\frac{184.5}{115} = \frac{x(115)}{115}$$

1.60%

5 ? mL 12.0 M 2.00 L 5.0 M

$$(12.0)(x) = (5.0)(\cancel{2.00})(2000)$$

$$\frac{(\cancel{12.0})(x)}{\cancel{12.0}} = \frac{(10,000)}{12.0}$$

$$x = 833.33 \text{ mL}$$

$$x = 830 \text{ mL}$$

6. ? mL 3.55M 555mL 0.25M

$$(3.55)(x) = (0.25)(555)$$

$$\frac{(3.55)(x)}{3.55} = \frac{138.75}{3.55}$$

$$x = 39.0845 \text{ mL}$$

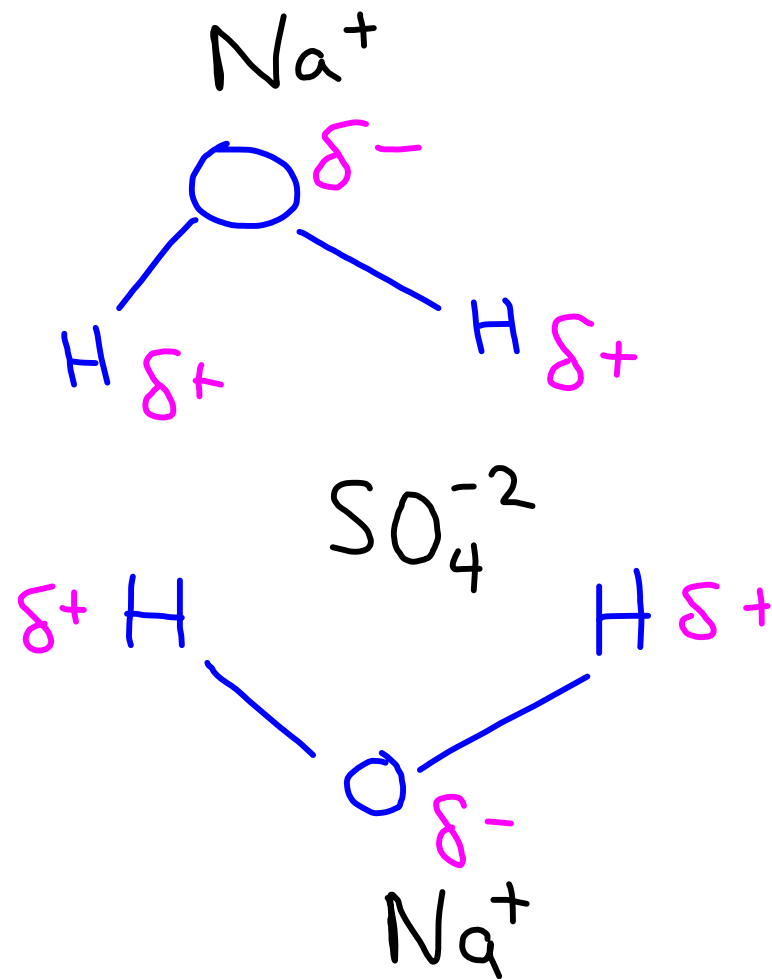
$$x = 39 \text{ mL}$$

$$(0.25)(25.5) = x(225)$$

$$\frac{6.375}{225} = \frac{x(225)}{225}$$

$$x = 0.02833\bar{3} \text{ M}$$

$$x = 0.028 \text{ M}$$



18 ? mL 4.5 M 0.65 mol

$$4.5 = \frac{0.65}{x}$$

$$\frac{0.65}{4.5} = \frac{4.5(x)}{4.5}$$

$$0.14\bar{4} \text{ L}$$

$$140 \text{ mL}$$