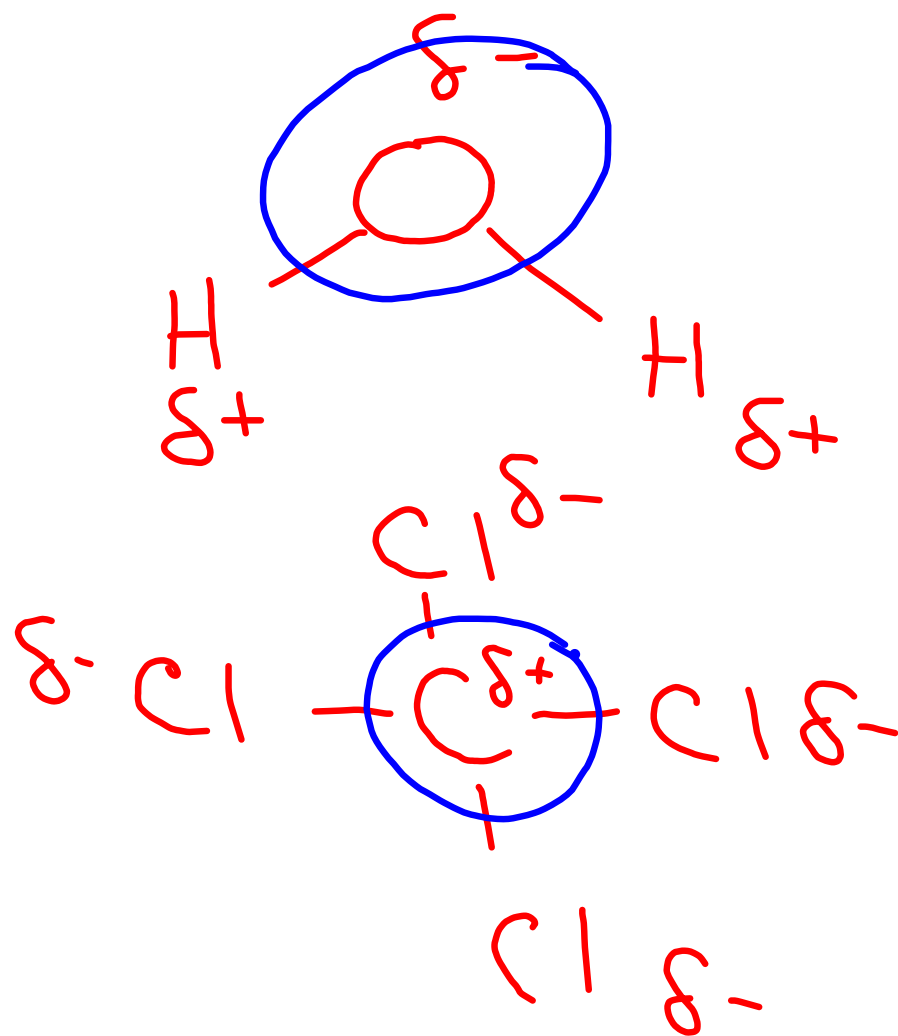
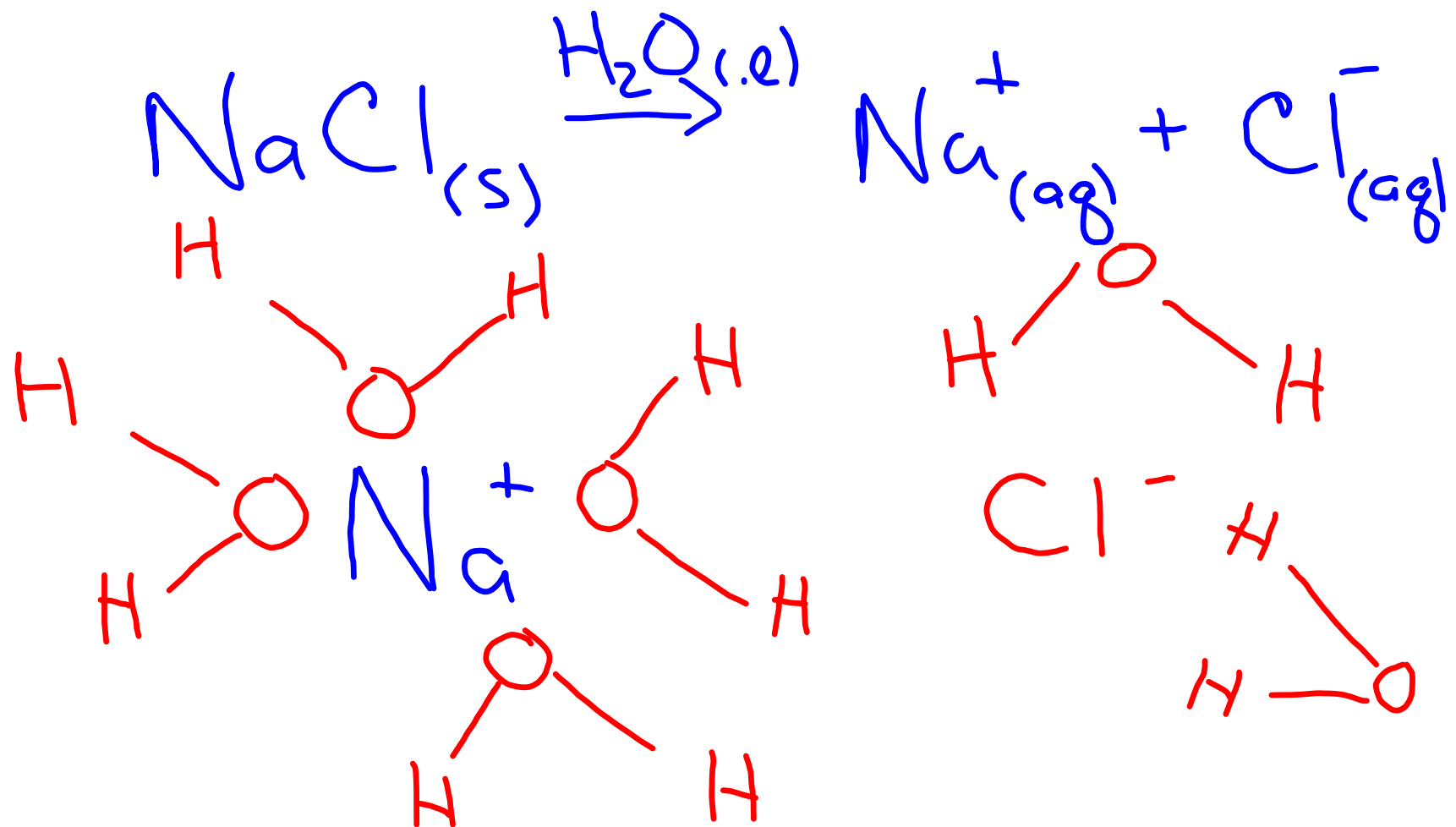




molecule

polar

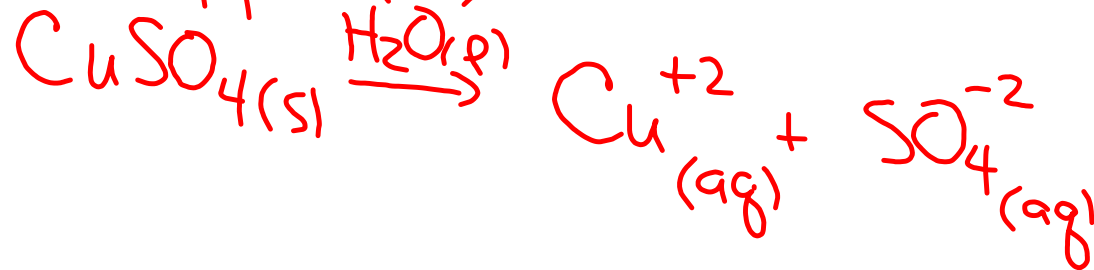
nonpolar

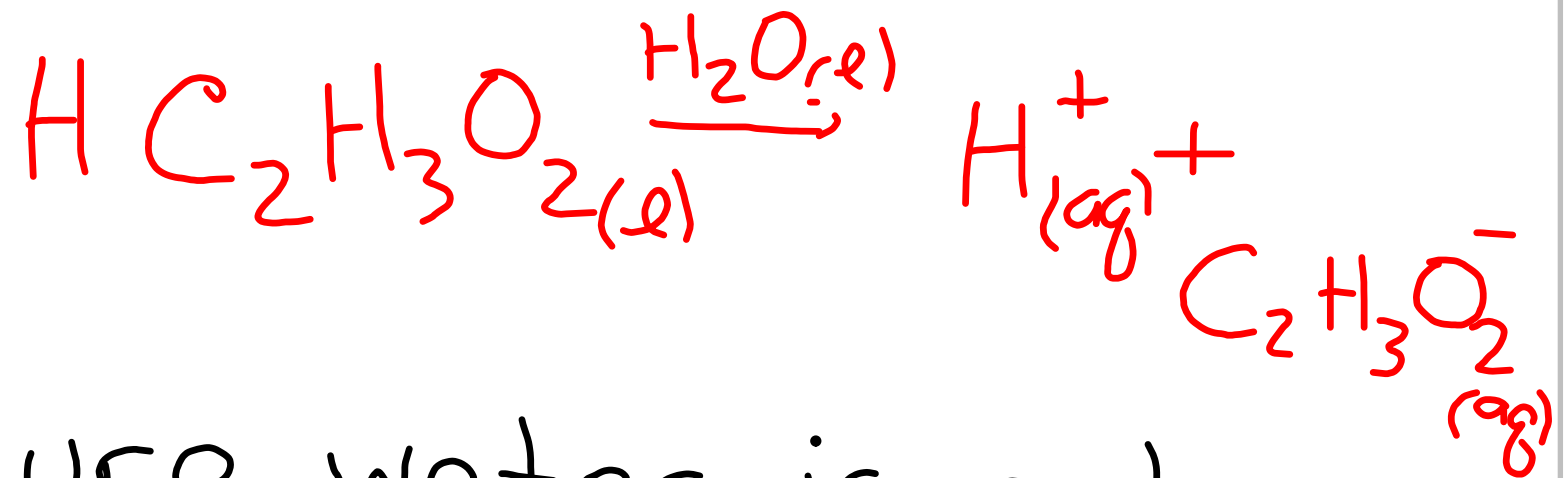


Salts = ionic bonding
dissolve in H_2O by
separating into ions.

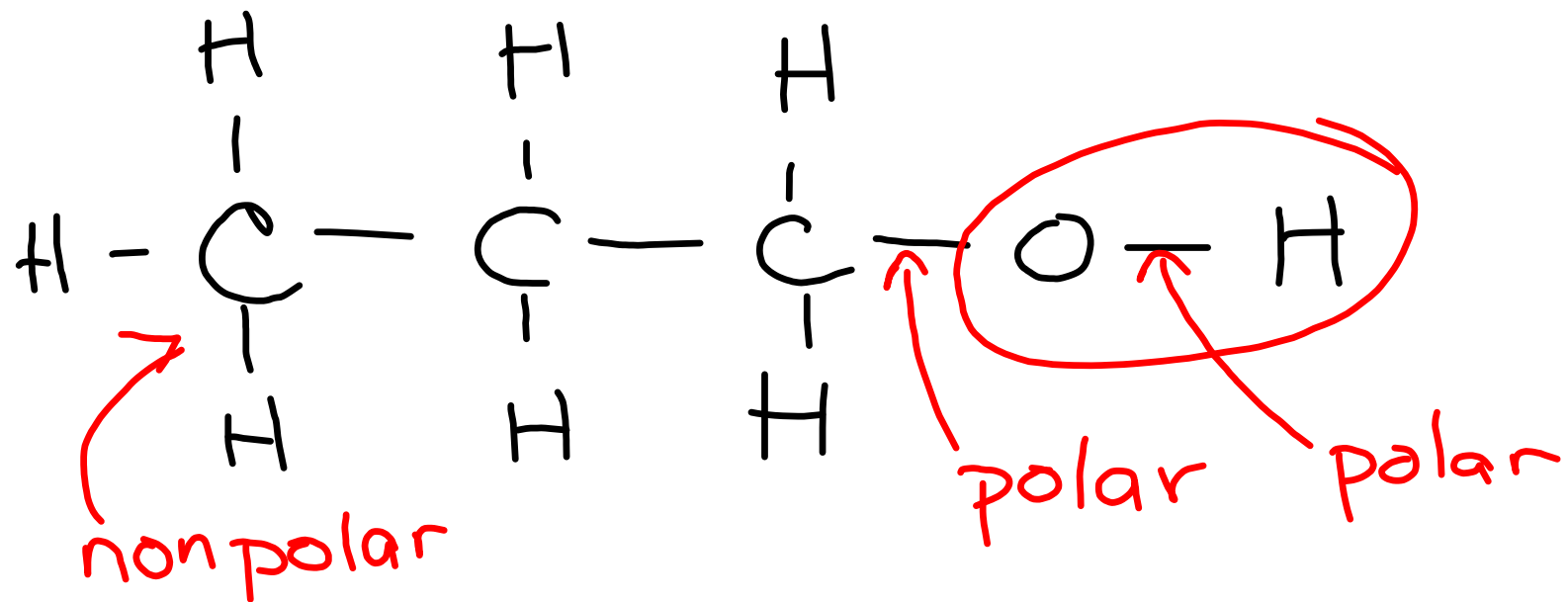


Copper(II) sulfate





pure water is not
an electrolyte b/c it
does not have any ions.



polar molecule

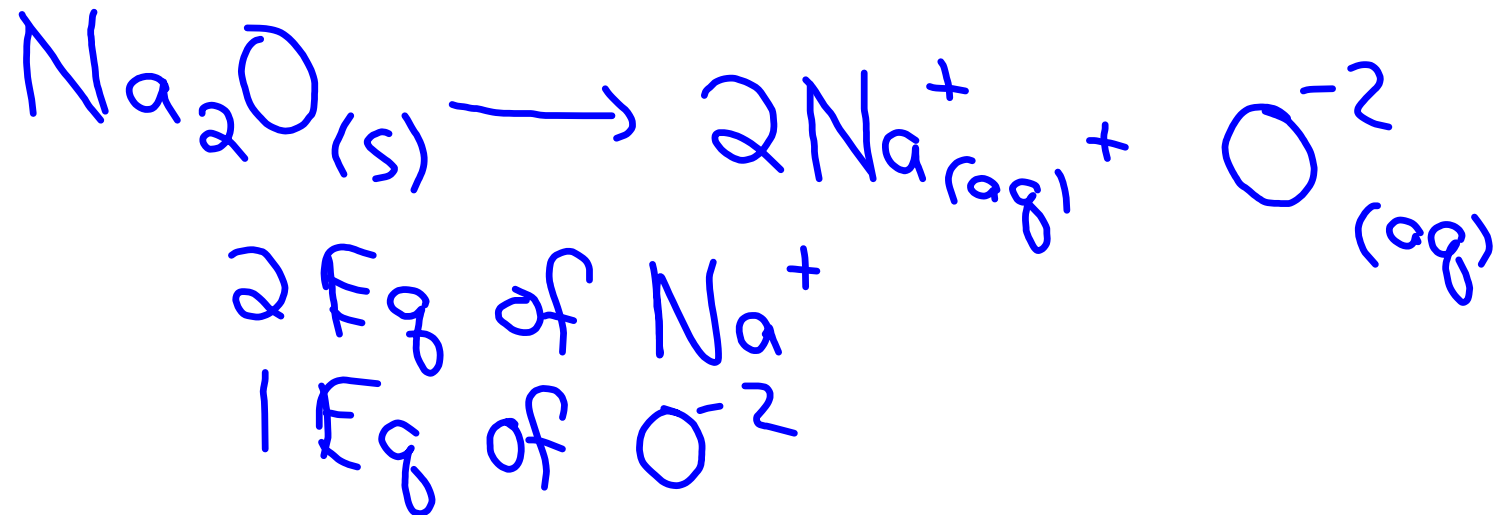
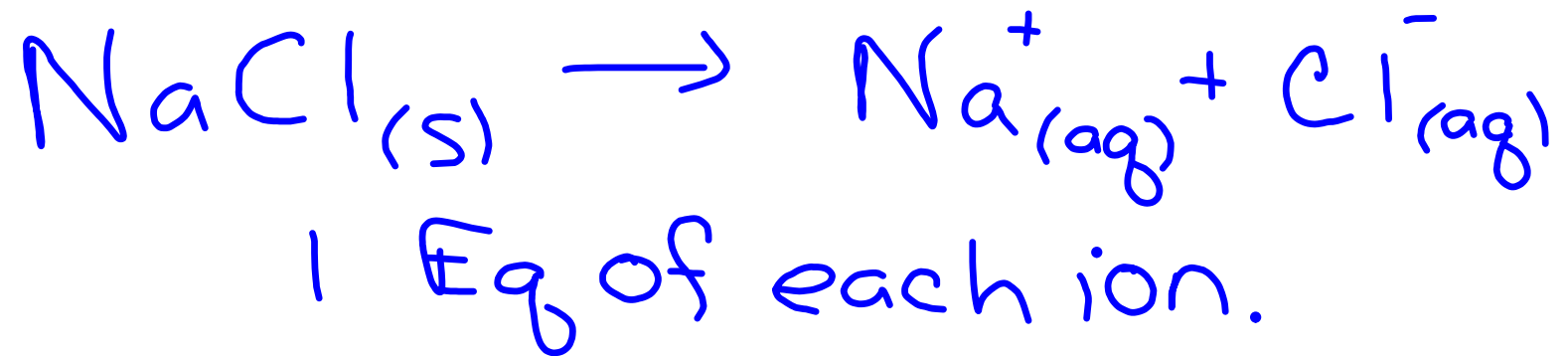
nonelectrolyte

"Like dissolves like"

polar will dissolve polar

nonpolar will dissolve nonpolar

- E. any salts dissolve in water
- NE. isopropyl alcohol dissolves in water
- NE. $C_6H_{12}O_6$ dissolves in water
- E. $LiNO_3$ dissolves in water
- NE. gasoline dissolves in carbon tetrachloride.
- NE. vegetable oil dissolves in CCl_4 .



Solubility

As temp $\uparrow$ for gases
Solubility $\downarrow$.

As temp $\uparrow$ for solids
Solubility $\uparrow$.

Saturated - the soln contains all the solute it can dissolve.

Unsaturated - the soln does not contain the maximum amount of solute.

0.9% K^+ (g/mL)

$$\frac{g}{mL} \times 100 = g_m\%$$

4. x mL

$$\frac{25.00}{x} \times 100 = 6.6\%$$

$$\frac{25.00}{x} = \frac{.066}{1}$$

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

$$x = 378.7878 \text{ mL}$$

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

$$9. \frac{25.0}{x} = \frac{.045}{1}$$

$$\frac{25.0}{.045} = \frac{.045(x)}{.045}$$

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

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

P242 7.31, 7.33, 7.35,
7.37

a. $\frac{25\text{g}}{150\text{g}} \times 100 =$

$$\frac{x}{355} = \frac{.225}{1}$$

$$1x = (355)(.225)$$

$$x = 79.9 \text{ mL}$$

$$\frac{12g}{225g} \times 100 =$$

P236

$$\frac{7\text{mg}}{100\text{mL}}$$

$$\frac{.007\text{g}}{100\text{mL}} \times 100 =$$

$$.007\% \text{ m/v}$$

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

$$1. \quad \text{C}_5\text{H}_3\text{O}_2$$

$$133 + 24 + 3 + 32 = 192\text{g} = 1\text{mol}$$

$$\frac{x}{.250\text{L}} = \frac{0.76\text{M}}{1}$$

$$x = .19 \text{ moles}$$

$$\frac{.19\text{mol} \times 192\text{g}}{1\text{mol}} = 36.48\text{g}$$

$$36\text{g}$$

$$2. \quad 24 + 160 + 64 = 248 \text{ g} = 1 \text{ mol}$$

$$\text{Mg}(\text{BrO}_2)_2$$

$$\frac{x}{0.775} = 1.34 \text{ M}$$

$$x = 1.0385 \text{ mol}$$

$$\frac{1.0385 \text{ mol} \times 248 \text{ g}}{258 \text{ g}} = 257.548 \text{ g}$$

8. $23\ 35 = 58\text{g} = 1\text{mol}$
 NaCl

$$\frac{x}{0.250} = 0.340\text{ M}$$

$$x = (.250)(0.340)$$

$$x = 0.085\text{mol}$$

$$\frac{0.085\text{mol} \times 58\text{g}}{1\text{mol}} = 4.9\text{g}$$

18. $\frac{0.65}{x} = \frac{4.5}{1}$

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

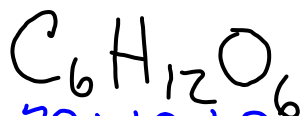
$$x = 0.1444 \text{ L}$$

$$x = 0.14 \text{ L}$$

$$x = 140 \text{ mL}$$

13.7% ? M

$$\frac{33.0\text{g}}{200\text{mL}} \times 100 = 16.5\% (\text{g/mL})$$



$$72 + 12 + 96 = 180\text{g} = 1\text{mol}$$

$$\frac{33.0\text{g} \times 1\text{mol}}{180\text{g}} = .183333\text{ mol}$$

$$\frac{0.183333\text{mol}}{.200\text{L}} = .9166665\text{M}$$

0.917 M

Molarity = Molar = "Big M"

Dilutions:

$$\left\{ \begin{array}{l} M_1 V_1 = M_2 V_2 \\ \%_1 V_1 = \%_2 V_2 \end{array} \right.$$

$$C_1 V_1 = C_2 V_2$$

14

$$\frac{(12.3)(15.0)}{115} = \frac{X(115)}{\cancel{115}}$$

$$X = 1.60\%$$

$$\frac{0.200 \text{ L} \times 1000 \text{ mL}}{1 \text{ L}} = 200 \text{ mL}$$

6.

a.
$$\frac{(\cancel{3.55})(x)}{3.55} = \frac{(0.25)(\cancel{555})}{3.55}$$

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

b.
$$\frac{(0.25)(25.5)}{225} = \frac{x(\cancel{225})}{\cancel{225}}$$

$$x = 0.028333 \text{ M}$$

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

7.

$$a.) \frac{(0.95)(3.450)}{555} = \frac{x(555)}{555}$$

$$x = 0.0059054054 \text{ m}$$

$$x = 0.0059 \text{ m}$$

$$b.) \frac{(0.0059)(150)}{333} = \frac{x(333)}{333}$$

$$x = 0.002657658 \text{ m}$$

$$x = 0.0027 \text{ m}$$

Homework 3, 11, 17, 19

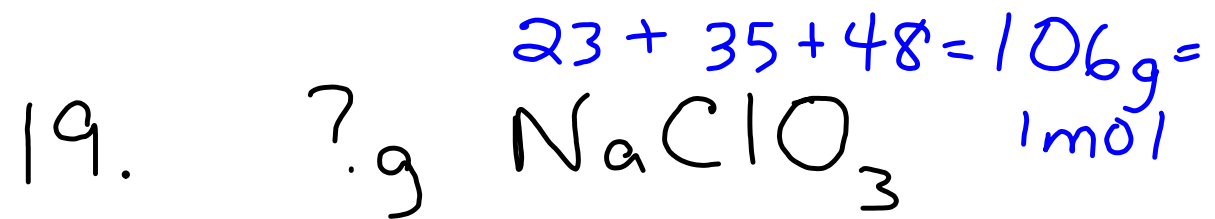
11.

$$\frac{x}{150} = \frac{0.153}{1}$$

$$x = (0.153)(150)$$

$$x = 22.95 \text{ g}$$

$$x = 23 \text{ g}$$



1255 mL 2.77 M

$$\frac{x}{1.255} = \frac{2.77}{1}$$

$$x = (2.77)(1.255)$$

$$x = 3.47635 \text{ mol}$$

$$\frac{3.47635 \text{ mol} \times 106 \text{ g}}{1 \text{ mol}} = 368.493 \text{ g}$$

368 g

17.

$$\frac{1889}{x} = \frac{0.128}{1}$$

$$\frac{1889}{0.128} = \frac{x(0.128)}{0.128}$$

$$x = 1468.75 \text{ mL}$$

$$1.46875 \text{ L}$$

$$1.47 \text{ L}$$

1. M or %

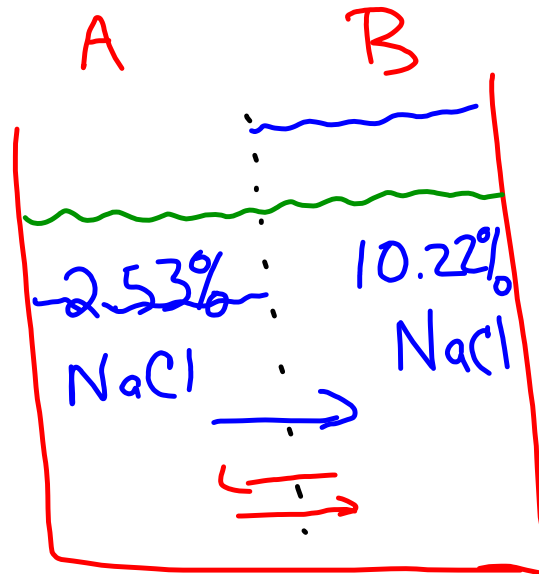
$$2. C_1 V_1 = C_2 V_2$$

24.

$$\frac{(0.50)(25.0)}{275} = \frac{x(275)}{275}$$

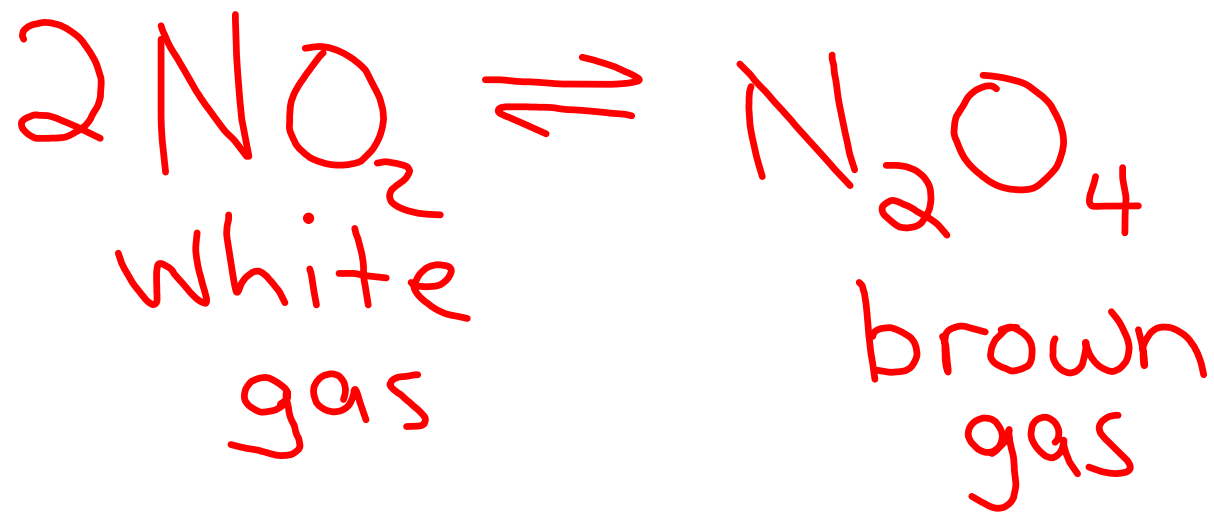
$$x = 0.0454545 \text{ M}$$

$$x = 0.045 \text{ M}$$



b.) Will have more H_2O at Equilibrium

Same concentration of NaCl on both sides



isotonic - same conc.
On both sides
hypertonic - more on one
side.
hypotonic - less on one side.

0.9% NaCl
5% glucose

- a) 5% NaCl
hyper
- b.) isotonic
- c.) hypo
- d.) iso
- e.) hypo