Chapter 7: Mole Concept

* $1\ dm^3 = 1000\ cm^3$

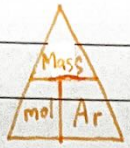
No.

Date

$$\% \text{ mass} = \frac{\text{no. of elements} \times \text{Ar of element}}{M_r} \times 100\%$$

$$\text{No. of moles} = \frac{\text{no. of particles}}{6.02 \times 10^{23}}$$

No. of moles:



No. of moles (gas):

Avogrado's constant = 6.02×10^{23}

Emp. formula:

	W	X	Y	Z
Mass / g				
Ar				
No. of moles				
Simplest ratio				

(should be given, % mass will do too)

(like atomic mass, on periodic table)

(Mass ÷ Ar)

(If its .1 or .2, round down, if its .8 OR .9 round up. No rounding if between that)

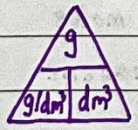
Mole ÷ smallest mole calculated

*MANS

If asking for actual formula:

(Mass given in qn.) ÷ (M_r of emp. formula) = number of times u need to x emp. formula

Conc. in g/dm^3:



Conc. in mol/dm^3:

$mol/dm^3 \longleftrightarrow g/dm^3$:

Mole ratio:

E.g. $2NaOH(aq) + H_2SO_4(aq) \longrightarrow Na_2SO_4(aq) + 2H_2O(l)$

If we need to find $NaOH : Na_2SO_4$,
use numbers included in chem. eqn.

$NaOH : Na_2SO_4$

2 : 1

If mole of NaOH is found/given, (let's say 0.003 mol)

$NaOH : Na_2SO_4$

2 : 1

0.003 mol : 0.0015 mol

(works other way around too :))

Percentage purity = $\frac{\text{mass/amount used}}{\text{total mass}} \times 100\%$

↳ Used amount can also be $\frac{\text{mass produced}}{A_r \text{ of product}} \times$ Atomic mass

Percentage yield = $\frac{\text{actual yield}}{\text{theoretical yield}} \times 100\%$

↳ Actual yield should be given in qn.

↳ Steps:

1. Find mole of the substance which mass is given
2. Use mole ratio to establish mole
3. Take mole x Ar to find theoretical yield
4. Compare w actual yield
5. Find percentage yield.

Limiting reagent

↳ Steps:

1. Use mass / volume / concentration to find number of moles
2. Use mole ratio to find excess and limiting reagent

Another way for % purity = $\frac{\text{mass of pure in sample}}{\text{mass of sample}} \times 100\%$

NOTE:

→ When proceeding onto mole ratio from limiting reagent, do NOT use the value of the one in excess. Use limiting reagent.