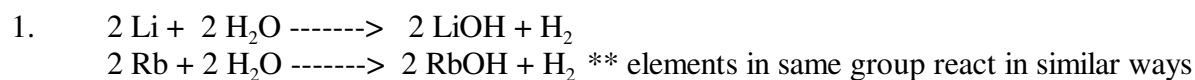
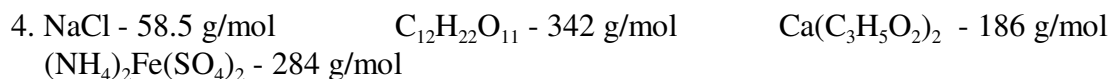


REVIEW OF SCH 3U1



2. Large \rightarrow bottom left of periodic table Small \rightarrow upper right (see periodic trends)

3. They have same number of protons, they have different number of neutrons.



5. 4 moles of S atoms needed (1:2 mol ratio Fe : S)

6. NaHCO_3 molar mass = 84 g/mol, in 21 g, $n = \text{mass} / \text{molar mass} = 21 \text{ g} / 84 \text{ g/mol} = 0.25$ moles

7. In 100 g sample,

40 g of C	6.71 g of H	53.29 g of O
moles C = $40 / 12$	moles H = $6.71 / 1$	moles O = $53.29 / 16$
= 3.33 mol	= 6.71 mol	= 3.33 mol O

mol ratio C : H : O 1 : 2 : 1 Empirical formula is CH_2O

Molar mass of empirical formula is 30 g/mol, and molar mass of compound is 90 g/mol since $90 / 30$ is 3, the molecular formula is 3x the empirical formula, or $\text{C}_3\text{H}_6\text{O}_3$

8 a) Empirical formula is CH_3

9. Number of atoms: Ca = 3, Mg = 5, Si = 8, O = 24, H = 2

10. a) sodium chlorate	b) potassium dichromate	c) iodic acid
d) manganese (II) chloride	e) calcium dihydrogen phosphate	f) calcium cyanide

14. No !, 0.5 represents the concentration or amount of solid dissolved per litre of solution.

15. C = mol / L mol = $0.1 \times 0.25 = 0.025$ mol NaCl

 molar mass of salt is 58.5 g/mol, Mass = $0.025 \times 58.5 = 1.46$ g

17. MgCl_2 \rightarrow molar mass is 95 g/mol

% Mg = $24 / 95 \times 100 = 25.3$ % % Cl = 74.7 %

18. In the Fe_2O_3 , % Fe is 70 % by mass. In 1.0 g of sample, 0.7 g of Fe exists. This 0.7 g came from the 2.8 sample of iron ore. Therefore the % Fe in the ore is $0.7 / 2.8 = 25$ %



$$\begin{aligned} m &= 50 \text{ g} \\ n &= 50 \text{ g} / 32 \text{ g/mol} \\ &= 1.563 \text{ mol} \end{aligned}$$

$$\begin{aligned} \text{Mass} &= ? \\ n &= 3.126 \text{ (2:1 mole ratio with O}_2\text{)} \\ m &= 3.126 \times 78 = 243.83 \text{ g} \end{aligned}$$

25. Moles Mg = 0.208 mol
moles O₂ = 0.156 mol

2 moles of Mg need 1 mole of O₂. 0.208 mol Mg needs 0.104 mol of O₂ ; enough O₂, O₂ is in excess.

$$\text{Moles O}_2 \text{ left over} = 0.156 - 0.104 = 0.0523 \text{ mol} = 1.674 \text{ g.}$$

26. Molar mass = 398 g/mol mass = 233.28 g

27. X₂O₃, X has a valence of +3 and is probably in group 3.

29. Use electronegativities.

S - O bond, ΔEN = 1.0 and bond is polar

Cl - Cl bond, ΔEN = 0 and bond is non polar

Cl - O bond, ΔEN = 0.5 and bond is non polar (just)

30. Moles NaIO₃ = 0.0828 Moles I₂ produced = 0.2484 (1:3 ratio with NaIO₃)

$$\text{Mass I}_2 \text{ produced} = 63.09 \text{ g}$$