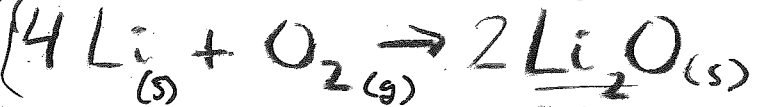


GROUP (1) Family - Alkali Metals

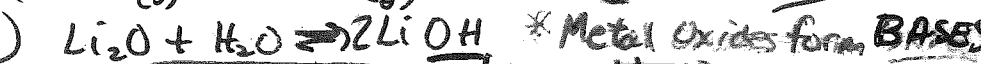
	e ⁻ config. of valence electrons
1 H	1s ¹
3 Li	2s ¹
11 Na	3s ¹
19 K	4s ¹
37 Rb	5s ¹
55 Cs	6s ¹
87 Fr	7s ¹

Reactions

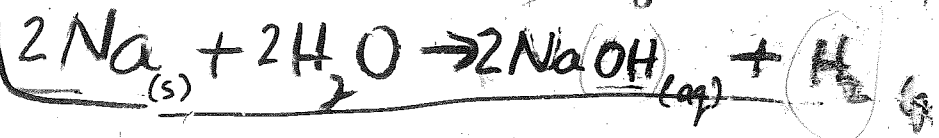
①



②



③



PROPERTIES

p292
BC ch. 11

- metallic (shiny, malleable, ductile, conduct e⁻)
- can cut with a knife

react with O₂ to form insoluble oxides
(Basic Solutions)

react with H₂O to form hydroxides and hydrogen.

The elements tend to lose one electron, leaving a stable p orbital below.

This gives them a combining capacity = 1, oxidation number = +

OR "ION CHARGE"
VALENCE = 1+

They become ions with charge +1

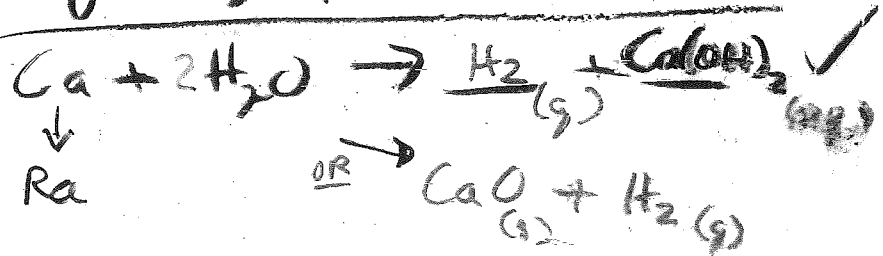
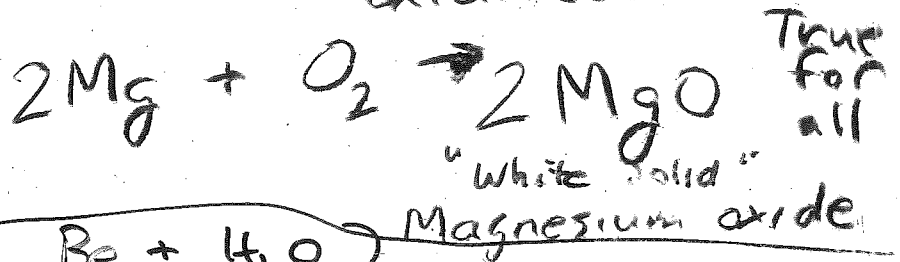
They have one valence electron

Heat
p292
11-9

GROUP (2) - Alkaline Earth Metals

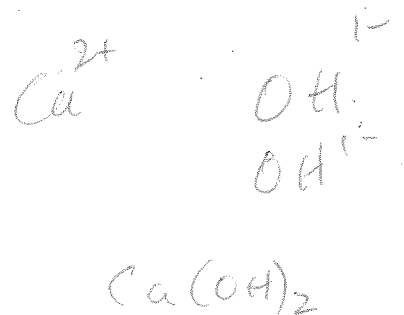
	e ⁻ config.
4 Be	2s ²
12 Mg	3s ²
20 Ca	4s ²
38 Sr	5s ²
56 Ba	6s ²
88 Ra	7s ²

- hard metals
grey/white when oxidized



- these elements tend to lose two electrons

gives them a valence = { 2+
or combining capacity }
ion charge



Groups 3-12 - Transition Metals

: most metals.

e^- configuration is the filling of the "d" orbital, full at $10 e^-$

This leads to multiple ion charges

+1, +2, +3, +4, +5 (note e^- first taken from s orbital)

example FeO Iron (II) oxide "Black"

Fe₂O₃ Iron (III) oxide "Red"

Group 13-15

Made up of mostly metalloids,

Can form \oplus and \ominus ions.

Some are semi-conductors.

GROUP 17

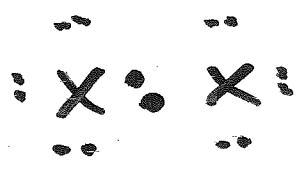
Halogens HO F Br I N Cl

e⁻ config

⁹ F	2p ⁵
¹⁷ Cl	3p ⁵
³⁵ Br	4p ⁵
⁵³ I	5p ⁵
⁸⁵ At	6p ⁵

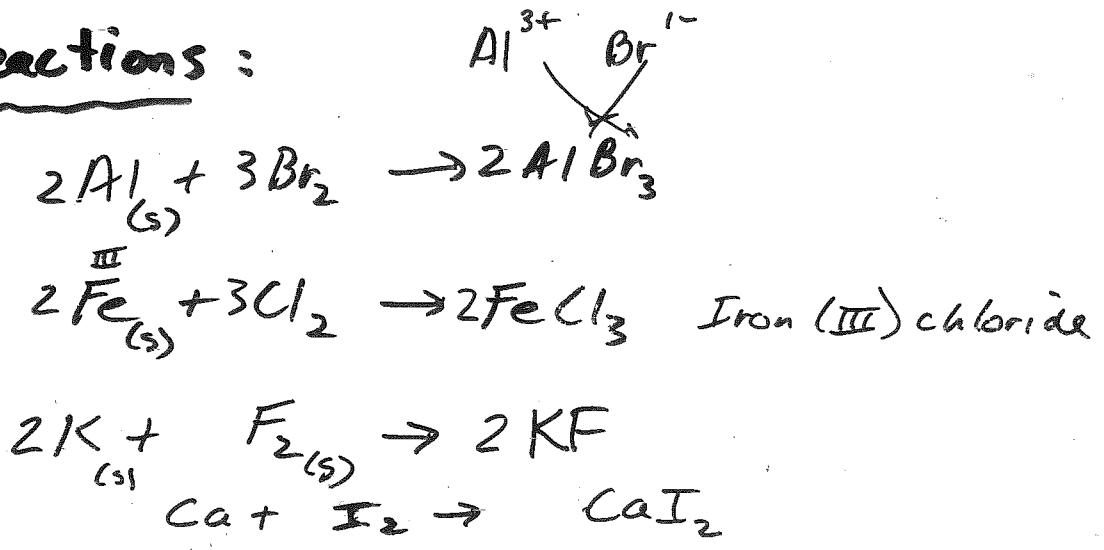
- diatomic X₂
 - react 1 to 1 with alkali metals
 - corrosive to metals
- ⇒ p⁵ will accept one e⁻ to complete energy orbital

Lewis Dot



∴ { Combining capacity
ion charge = -1
valence

Reactions :



Group 18 - Noble Gases

e ⁻ config.	
² He	1s ²
¹⁰ Ne	2p ⁶
¹⁸ Ar	3p ⁶
³⁶ Kr	4p ⁶
⁵⁴ Xe	5p ⁶
⁸⁶ Rn	6p ⁶

- Very stable
Highly Unreactive

- Used to be called
"inert"

(Neil Bartlett
1962 UBC



- Full "p", "s" shells

∴ Valence
Comb. Capacity = 0
Ion chg.

BC Chem II

p. 293 Quick Check #1-3

p. 297-298 6.1 Review #1-12

<u>Group</u>	12	form	+2	ions	
	13	form	+3	ions	
	14	form	+4 or -4	ions	7
	15	form	-3	ions	
	16	form	-2	ions	
