

Year 10 C Pathway

Mr. D. Patterson

INTRODUCTORY CHEMISTRY

Outcomes

- Indicate which elements are metal and non metals on the periodic table
- Know what a group and period is on the periodic table
- Have an idea about how the valency of an ion can be determined by the periodic table

Periodic Table

- The shape of the periodic table has been specially designed to help understand the different elements.

1		2												3	4	5	6	7	0	
				H																He
Li	Be											B	C	N	O	F	Ne			
Na	Mg											Al	Si	P	S	Cl	Ar			
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr			
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe			
Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn			
Fr	Ra	Ac																		

Non Metals

1	2											3	4	5	6	7	0			
		H															He			
Li	Be											B	C	N	O	F	Ne			
Na	Mg											Al	Si	P	S	Cl	Ar			
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr			
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe			
Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn			
Fr	Ra	Ac																		

Metals

Group names

Group Number	Group name
1	Alkali Metals
2	Alkaline Earth Metals
7	Halogens
8	Noble Gases

Inert – do not react – full
outer electron shell

1	2											3	4	5	6	7	0	
																		4 He
7 Li	8 Be											11 B	12 C	14 N	16 O	18 F	20 Ne	
11 Na	12 Mg											13 Al	14 Si	15 P	16 S	17 Cl	18 Ar	
19 K	20 Ca	21 Sc	22 Ti	23 V	24 Cr	25 Mn	26 Fe	27 Co	28 Ni	29 Cu	30 Zn	31 Ga	32 Ge	33 As	34 Se	35 Br	36 Kr	
37 Rb	38 Sr	39 Y	40 Zr	41 Nb	42 Mo	43 Tc	44 Ru	45 Rh	46 Pd	47 Ag	48 Cd	49 In	50 Sn	51 Sb	52 Te	53 I	54 Xe	
55 Cs	56 Ba	57 La	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 Tl	82 Pb	83 Bi	84 Po	85 At	86 Rn	
(223) Fr	(226) Ra	(227) Ac																

Periods - rows

Periodic trends

- ⦿ As we go down a group:
 - Number of valence electrons stay the same
 - Valency (charge) of the ion stays the same
- ⦿ As we go across a period:
 - Number of protons (atomic number) increases
 - Number of electrons for neutral atom increases

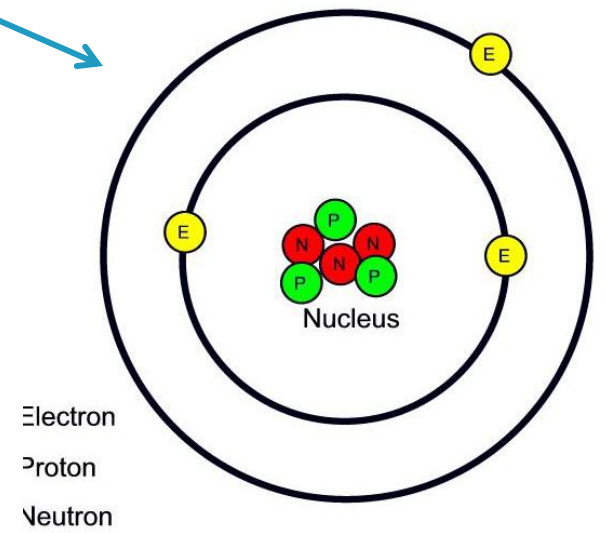
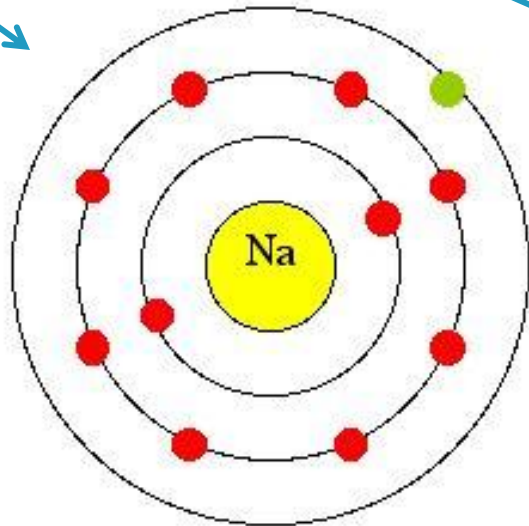
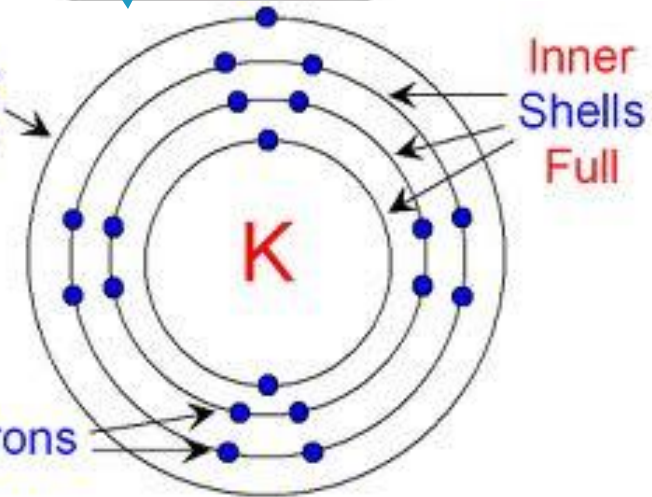
1	2											3	4	5	6	7	0	
		<div style="border: 1px solid black; padding: 5px; display: inline-block;"> 1 H 1 </div>																2 He 4
3 Li	4 Be											5 B	6 C	7 N	8 O	9 F	10 Ne	
11 Na	12 Mg											13 Al	14 Si	15 P	16 S	17 Cl	18 Ar	
19 K	20 Ca	21 Sc	22 Ti	23 V	24 Cr	25 Mn	26 Fe	27 Co	28 Ni	29 Cu	30 Zn	31 Ga	32 Ge	33 As	34 Se	35 Br	36 Kr	
37 Rb	38 Sr	39 Y	40 Zr	41 Nb	42 Mo	43 Tc	44 Ru	45 Rh	46 Pd	47 Ag	48 Cd	49 In	50 Sn	51 Sb	52 Te	53 I	54 Xe	
55 Cs	56 Ba	57 La	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 Tl	82 Pb	83 Bi	84 Po	85 At	86 Rn	
(223) Fr	(226) Ra	(227) Ac																

As we go down a group:

Number of valence electrons stay the same

Valency (charge) of the ion stays the same

1	2											3	4	5	6	7	0	
		H																He
7 Li	8 Be											11 B	12 C	14 N	16 O	18 F	20 Ne	
19 Na	20 Mg											27 Al	28 Si	31 P	32 S	35.5 Cl	40 Ar	
39 K	40 Ca	45 Sc	48 Ti	51 V	52 Cr	55 Mn	56 Fe	59 Co	59 Ni	63.5 Cu	65 Zn	70 Ga	73 Ge	75 As	79 Se	80 Br	84 Kr	
85 Rb	88 Sr	89 Y	91 Zr	93 Nb	96 Mo	101 Tc	101 Ru	103 Rh	106 Pd	108 Ag	112 Cd	115 In	119 Sn	122 Sb	128 Te	127 I	131 Xe	
133 Cs	137 Ba	139 La	178 Hf	181 Ta	184 W	186 Re	190 Os	192 Ir	195 Pt	197 Au	201 Hg	204 Tl	207 Pb	209 Bi	(209) Po	(210) At	(222) Rn	
(223) Fr	(226) Ra	(227) Ac																
87	88	89																



1	2											3	4	5	6	7	0	
		H																He
3 Li	4 Be											5 B	6 C	7 N	8 O	9 F	10 Ne	
11 Na	12 Mg											13 Al	14 Si	15 P	16 S	17 Cl	18 Ar	
19 K	20 Ca	21 Sc	22 Ti	23 V	24 Cr	25 Mn	26 Fe	27 Co	28 Ni	29 Cu	30 Zn	31 Ga	32 Ge	33 As	34 Se	35 Br	36 Kr	
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55 Cs	56 Ba	57 La	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 Tl	82 Pb	83 Bi	84 Po	(210) At	(222) Rn	
(223) Fr	(226) Ra	(227) Ac																

K^+

Na^+

Li^+

Group number gives the valency of the ion

Group number	Valency of ions	Why?
1	+1	Easily loses its only electron from outer shell
2	+2	Easily loses all 2 electrons from outer shell
3	+3	Easily loses all 3 electrons from outer shell
4	+4	Easily loses all 4 electrons from outer shell
5	-3	Easily gains 3 electrons to fill outer shell
6	-2	Easily gains 2 electrons to fill outer shell
7	-1	Easily gains 1 electron to fill outer shell

Outcomes

- Indicate which elements are metal and non metals on the periodic table
- Know what a group and period is on the periodic table
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- Checkpoint 2.4, 2.5, 2.6 Set 2 (Q3-4), Set 4 (Q4)