

Review of SC10F & 20F



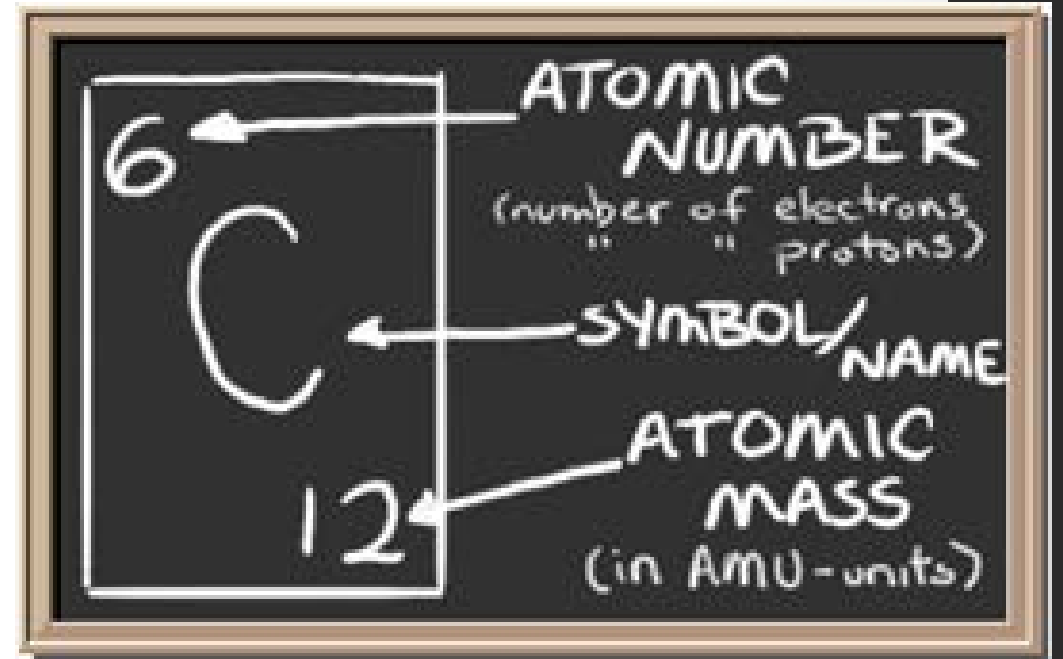
The Periodic Table:

1. Atomic Number:

- Number of PROTONS in an ATOM of an ELEMENT.

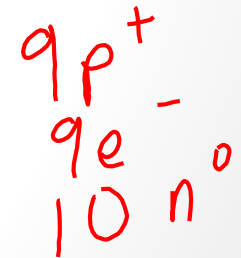
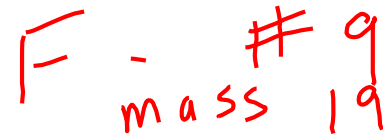
2. Atomic Mass:

- SUM of the MASS of PROTONS and NEUTRONS
- Recall:
 - Protons = POSITIVE, 1AMU
 - Electrons = NEGATIVE, 0AMU
 - Neutrons = NEUTRAL, 1AMU



Example:

How many protons, electrons and neutrons does fluorine have?



The Periodic Table:

3. Groups or Families:

- COLUMNS on the periodic table.
- the major families are:
 - Column 1 → ALKALI METALS
 - Column 2 → ALKALINE EARTH METALS
 - Column 6 → CHALCOGENS
 - Column 7 → HALOGENS
 - Column 8 → NOBLE (INERT) GASES

1	2											3	4	5	6	7	8
																	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	Rf	Db	Sg	Bh	Hs	Mt	Ds	Rg							

The Periodic Table:

4. Metals:

- on the LEFT side of the staircase
- are usually SHINEY, MALLEABLE, CONDUCTIVE, DUCTILE, etc.

5. Non-Metals:

- on the RIGHT side of the staircase
- are usually DULL, BRITTLE, NON-CONDUCTIVE, NON-DUCTILE.

6. Metalloids:

- On the STAIRCASE
- have properties of both metals and non-metals

1 H 1.008																	2 He 4.003
3 Li 6.941	4 Be 9.012											5 B 10.81	6 C 12.01	7 N 14.01	8 O 16.00	9 F 19.00	10 Ne 20.18
11 Na 23.00	12 Mg 24.31											13 Al 26.98	14 Si 28.09	15 P 30.97	16 S 32.06	17 Cl 35.45	18 Ar 39.95
19 K 39.10	20 Ca 40.08	21 Sc 44.96	22 Ti 47.88	23 V 50.94	24 Cr 52.00	25 Mn 54.94	26 Fe 55.85	27 Co 58.93	28 Ni 58.70	29 Cu 63.55	30 Zn 65.38	31 Ga 69.72	32 Ge 72.59	33 As 74.92	34 Se 78.96	35 Br 79.90	36 Kr 83.80
37 Rb 85.47	38 Sr 87.62	39 Y 88.91	40 Zr 91.22	41 Nb 92.91	42 Mo 95.94	43 Tc (98)	44 Ru 101.1	45 Rh 102.9	46 Pd 106.4	47 Ag 107.9	48 Cd 112.4	49 In 114.8	50 Sn 118.7	51 Sb 121.8	52 Te 127.6	53 I 126.9	54 Xe 131.3
55 Cs 132.9	56 Ba 137.3	57 La 138.9	72 Hf 178.5	73 Ta 180.9	74 W 183.9	75 Re 186.2	76 Os 190.2	77 Ir 192.2	78 Pt 195.1	79 Au 197.0	80 Hg 200.6	81 Tl 204.4	82 Pb 207.2	83 Bi 209.0	84 Po (209)	85 At (210)	86 Rn (222)
87 Fr (223)	88 Ra (226)	89 Ac (227)	104 Rf (261)	105 Ha (262)	106 Unh (263)	107 Uns (262)	109 Uue (267)										

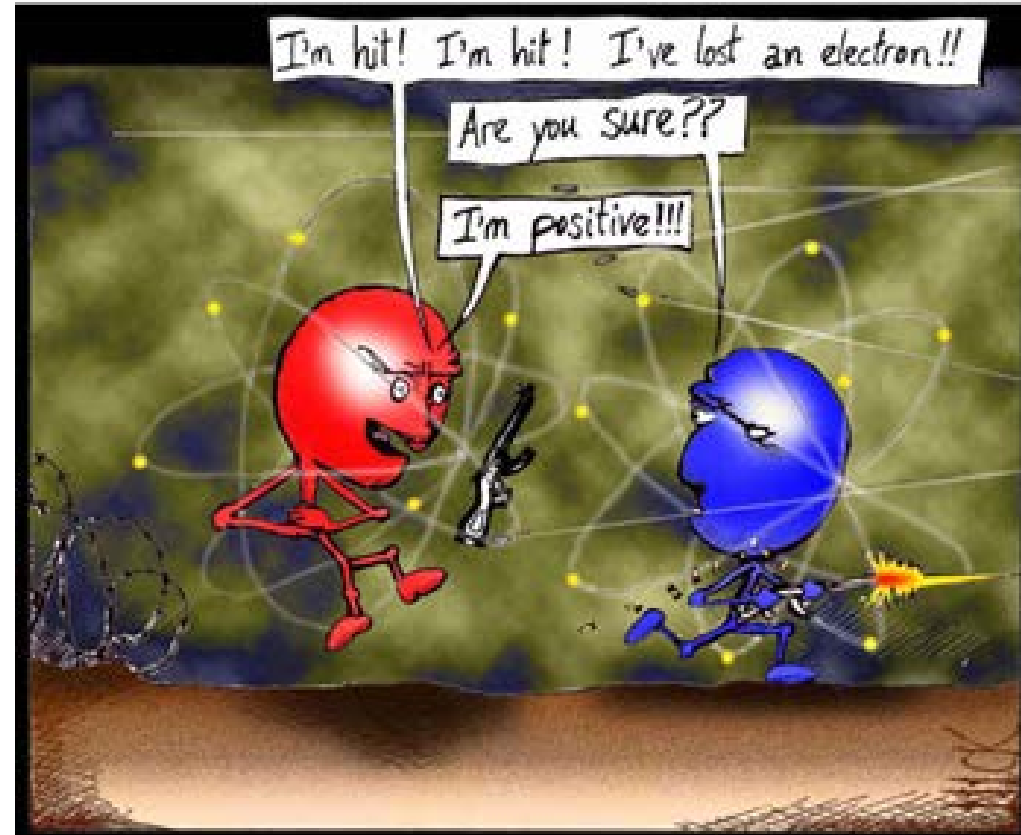
Lanthanides	58 Ce 140.1	59 Pr 140.9	60 Nd 144.2	61 Pm (145)	62 Sm 150.4	63 Eu 152.0	64 Gd 157.3	65 Tb 158.9	66 Dy 162.5	67 Ho 164.9	68 Er 167.3	69 Tm 168.9	70 Yb 173.0	71 Lu 175.0
Actinides	90 Th 232.0	91 Pa 231.0	92 U 238.0	93 Np 237.0	94 Pu (244)	95 Am (243)	96 Cm (247)	97 Bk (247)	98 Cf (251)	99 Es (252)	100 Fm (257)	101 Md (258)	102 No (259)	103 Lr (260)

Atoms are all charged up!

Ions:

- Atoms will gain or lose **ELECTRONS** to achieve a **STABLE OCTET (FULL OUTER SHELL)**
- If an atom:

Gains Electrons	Loses Electrons
Becomes more negative	Becomes less negative (more positive)
Negatively charged	Positively charged
Usually non-metals	Usually metals
Ex) sulphur S^{2-}	Ex) Aluminum Al^{3+}

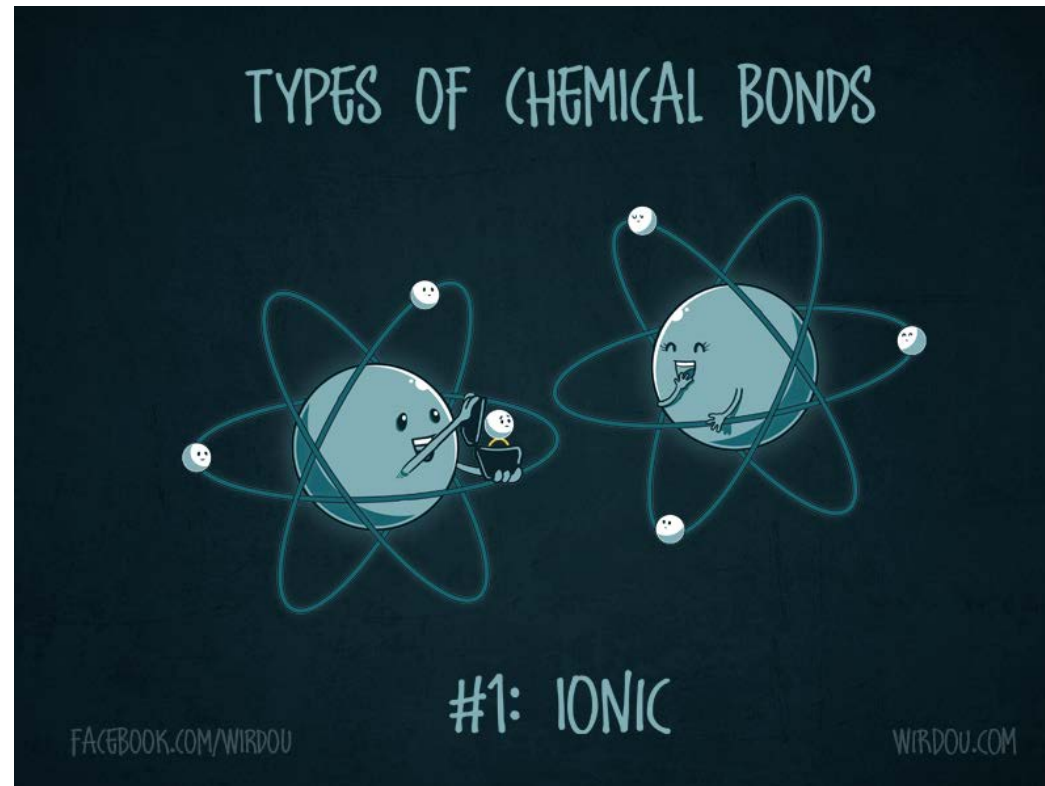


Another casualty in the War of the Atoms.

Bonding...

a) *Ionic Bonds*

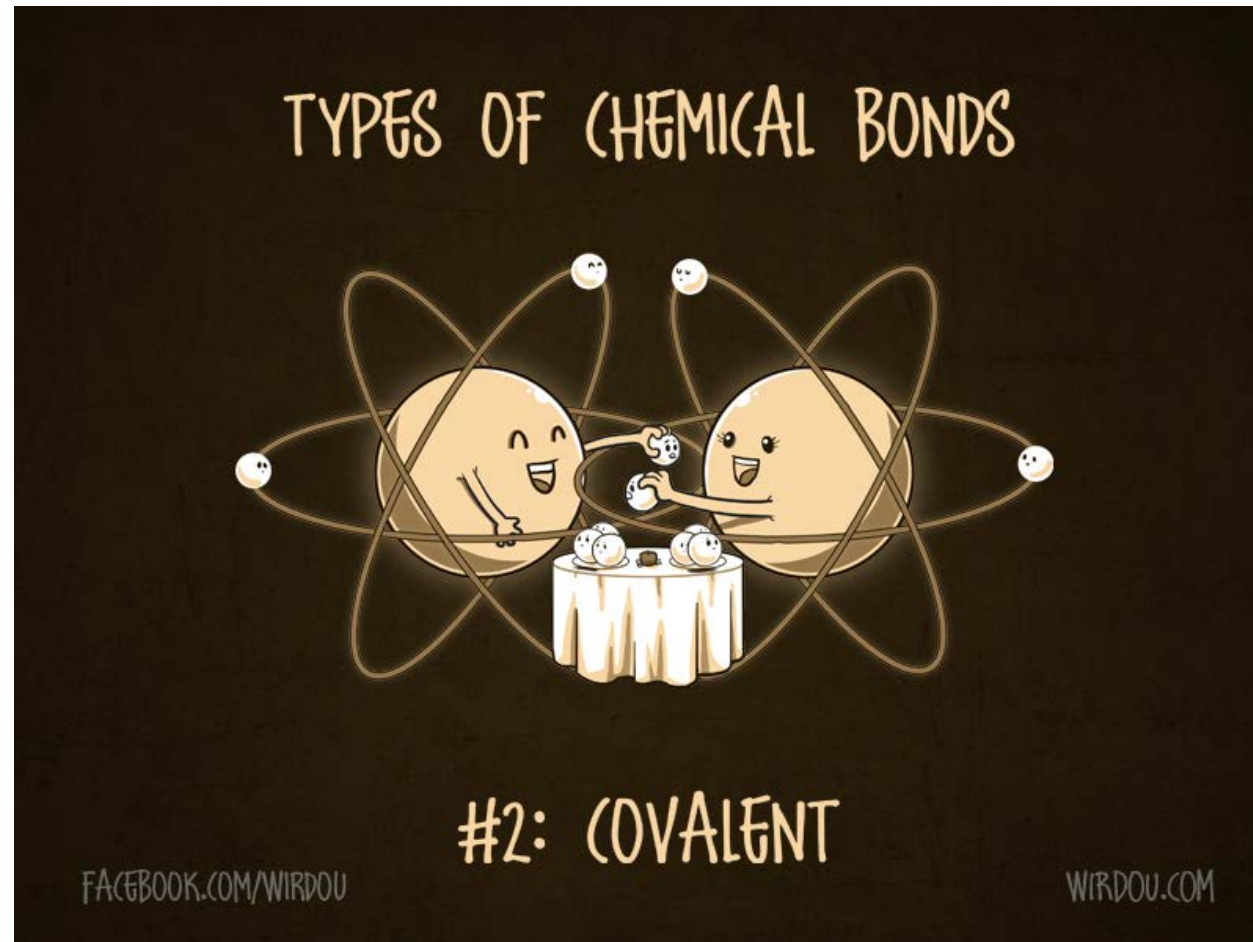
- Result of the **TRANSFER** of **ELECTRONS** creating oppositely charged **IONS**.
- Bonding of a **METAL** and a **NON-METAL** (metals lose electrons and non metals gain electrons).
- **PROPORTIONS** of **ATOMS** are determined by **IONIC CHARGES**.



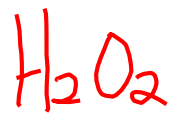
Bonding...

b) *Covalent Bonds*

- Result from the **SHARING** of **ELECTRONS**.
- Bonding of **TWO NON-METALS** (both want to gain electrons)



Naming...



We will review all the naming that you did in grade 10, but here's a quick refresher:

Covalent Molecules:

- are named using **PREFIXES** since we don't have charges to show us how they go together.



Examples:

CO — Carbon monoxide

CO₂ Carbon dioxide

B₂F₃ diBoron trifluoride

Trinitrogen pentoxide N₃O₅

sulphur hexafluoride SF₆

Naming...

Ionic Molecules:

- We DON'T USE PREFIXES since we have CHARGES to show us how they go together.
- When writing the formula, we put the CORRECT NUMBER OF IONS together so the charge adds to ZERO.

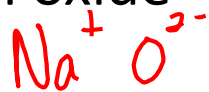
Examples:

NaCl Sodium chloride

MgCl₂ Magnesium chloride

Al₂O₃ Aluminum oxide

Sodium oxide



Magnesium nitride

