

Notes - Ions

- some elements in the P.T. tend to lose or gain electrons to/from the elements around them

Ions = atoms that have lost (+) or gained (-) electrons in valence (outer) shell

Metals - tend to lose electrons due to their small # of valence electrons.

- causes a + charge, because they have more protons

* we express the ion formula w/ symbol + valence # + charge

ex) Magnesium ion = Mg^{2+} , Aluminum ion = Al^{3+}

Non-metals - tend to gain electrons due to their large # of electrons in valence shell.

- causes a - charge, because they have more electrons

ex) Chlorine ion = Cl^{-} (we don't write a 1), Sulfur ion = S^{2-}

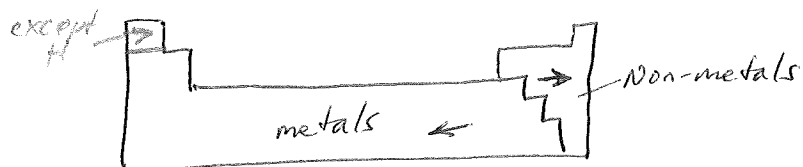
A metal + A non-metal ionically bonded because of opposite charges makes an ionic compound

* Metals tend to lose all of their valence electrons in an ionic compound, so you need to know valence #.

Family #	1	2	3	4	5	6	7	8
Valence e's	1	2	3	4	5	6	7	8
Valence #	1	2	3	4	3	2	1	0

Lose e's
share e's
gain e's
Don't react

* Non-metals tend to gain e's to fill their outer valence
 - elements in family 15 tend to gain 3 ves



②

ex) What ion does Mg make? ... hint - it's a metal



ex) What ion does Cl make?



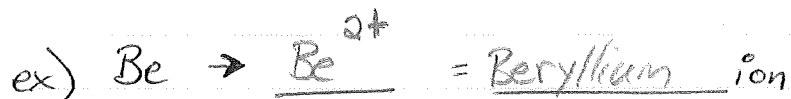
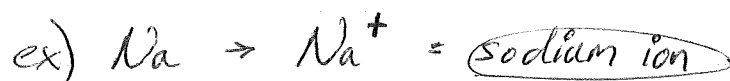
Naming monatomic Ions (Nomenclature)

A monatomic ion is an ion that contains only 1 atom of an element

- must lose or gain at least 1 electron

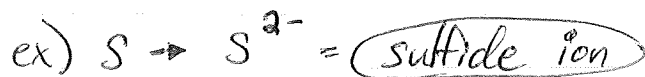
Naming metallic ions

- Just use the name of the metal - simple



Naming non-metal ions

- Start with the name of the element and then add the suffix -ide to it



3

More practice

element	metal/non-metal?	family #	valence e's	ion formula
Fr Francium	M	1	1	Fr ⁺
Sr Strontium	M	2	2	Sr ²⁺
Al Aluminum	M	13	3	Al ³⁺
I Iodine	N	17	7	I ⁻ (I)
Ra Radium	M	2	2	Ra ²⁺
P Phosphorus	N	15	5	P ³⁻