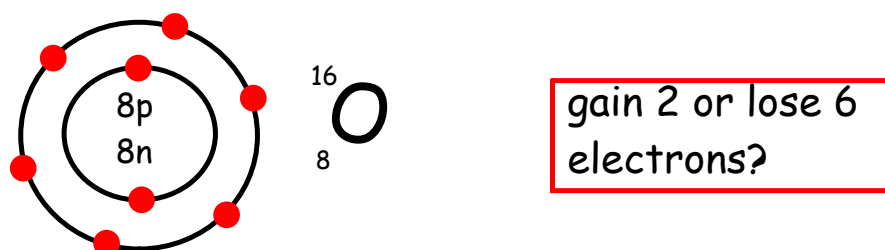


Warm-Up

Draw a bohr diagram for Aluminum. How many valence electrons does it have? What would it have to do with its electrons to have a full outer shell.

An **ion** is a charged atom. Ions are formed when atoms **gain** or **lose** electrons.

When orbits have outer shells that are not full (or half-way)

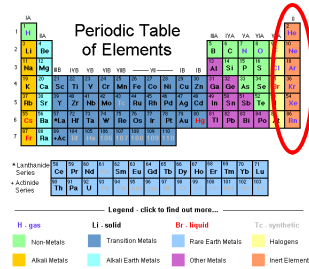
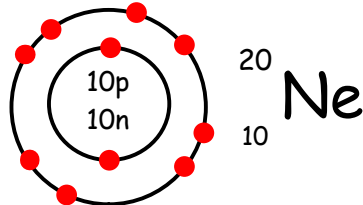


They have a tendency to want to fill or empty that outer level.

If the element **loses** electrons, it would become more positive.

If the element **gains** electrons, it would become more negative.

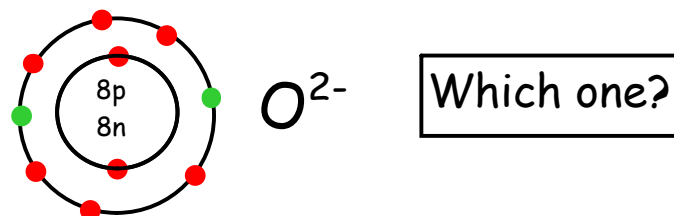
The noble gases don't like to react as much because they are chemically stable.



Ionic charges are assigned to an unstable element to indicate how many electrons were gained or lost.

Ex. O^{2-} , N^{3-} , Be^{2+} , Ne

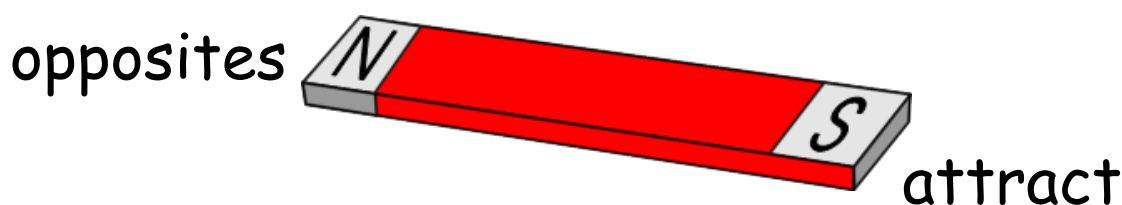
The stable Bohr diagram represents one of the noble gases.



We would say the "Isoelectronic Noble Gas" for Oxygen would be Neon.

So, back to the idea of sharing...

If we were to think of a magnet



If we have a positive ion and a negative ion (a metal and a non-metal), they attract. When they form it is called an **ionic compound**.

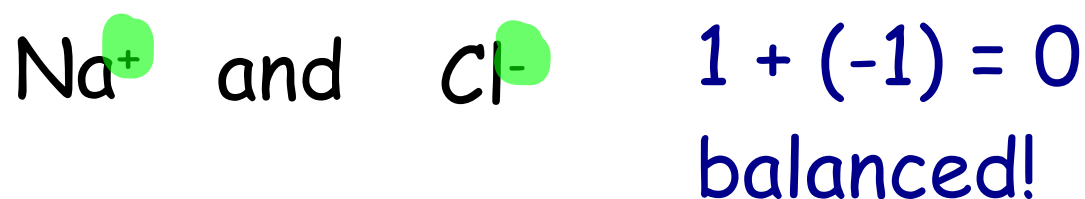
This means there is a transfer of ions from a metal to a non-metal.

Learning about Ionic Compounds

What would the stable ion Bohr diagram be for Na and Cl? What would their isoelectronic noble gases be?

Example: Sodium and Chlorine

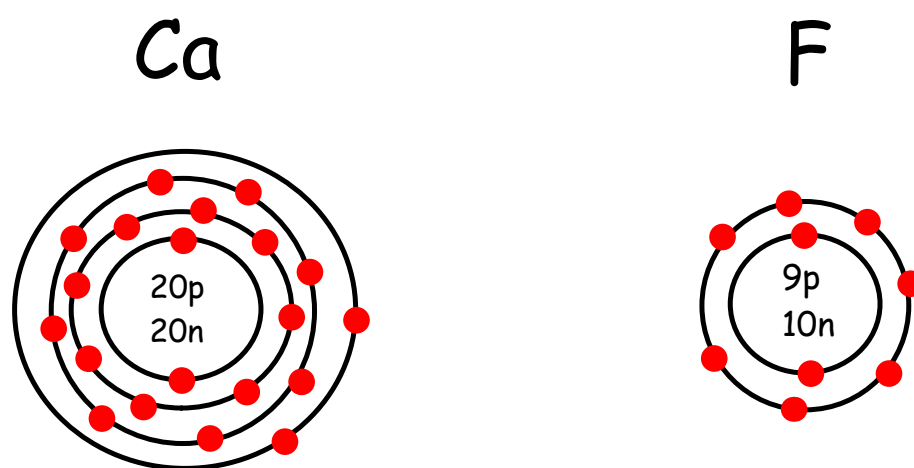
Overall, for an ionic compound to form, there has to be a balance between the charges.



So the compound formed is
NaCl!!

What happens when you combine:

Ca and F



We end up with one ion of Calcium and two ions of Fluorine. So our ionic compound equation is CaF_2

Use Bohr diagrams to find a balance for the following pairs of elements. Then write the ionic compound they would make.

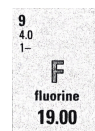
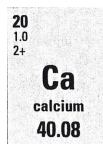
- (a) Li and F
- (b) Be and F
- (c) Al and F
- (d) Mg and N
- (e) Al and O

A simpler way to balance ionic compounds...

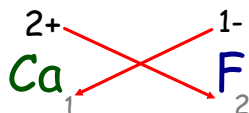
1. Write the symbols, with the metal first.



2. Write the ionic charge above each symbol to indicate the stable ion that each element forms.



3. Cross the two charges and get rid of the signs.



4. Ignore any 1's and combine the terms together. Reduce if possible.



5. To name the compound, name the metal first followed by the non-metal. The ending of the non-metal changes to "ide"

calcium fluoride

Ion Charges and Compounds

The Periodic Table represents elements in such a way as to highlight their similarities and differences.

40

Ar

18

ARGON

Element symbol: **Ar** Protons: **18** ●

Mass number: **40** Neutrons: **22** ●

Atomic number: **18** Electrons: **18** ●

Atomic Mass: **39.948**

Non-metal

Group VIII or 0 - Noble gases

Electronic structure: 2.8.8



	I	II	Transition metals										III	IV	V	VI	VII	VIII	
Period 1												H							He
Period 2	Li	Be											B	C	N	O	F	Ne	
Period 3	Na	Mg											Al	Si	P	S	Cl	Ar	
Period 4	K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	
Period 5	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe	
Period 6	Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn	
Period 7	Fr	Ra	Ac																
			Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu			
			Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr			

Metals

Non-metals

Argon ▼

Instructions

Find the Elements

Unlock the Code

Important!!

Make sure it is balanced!

The Total
Positive Charge = The Total
Negative Charge

Practice

Al and Cl

Be and O

Transition Metal Ionic Compounds

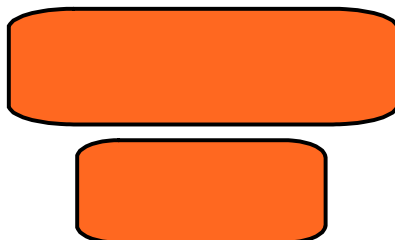
Roman Numerals

	XI	XII	I
X			II
IX			III
VIII			IV
VII	VI	V	

Ionic compounds are done the same way with transition metals except roman numerals have to be included with the metals.

Example: Fe^{3+} and O

26
1.8
3+
2+
Fe
iron
55.85



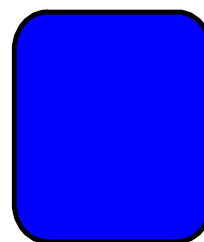
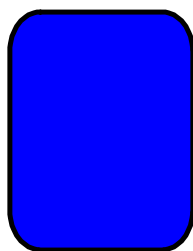
8
3.4
2-
O
oxygen
16.00

Write out the name of the ionic compound including "ide" at the end. This time include the charge of the roman numeral after the metal.

iron(III) oxide

Example

What would be the chemical formula for chromium(II) sulfide?



Read Pages 193 - 195 and do
questions # 1 - 10