

Bonding Basics - Ionic Bonds

Name _____

Complete the chart for each element.

Element	# of Protons	# of Electrons	# of Valence Electrons	Oxidation Number
Sodium				
Chlorine				
Beryllium				
Fluorine				
Lithium				
Oxygen				
Phosphorus				

Follow your teacher's directions to complete each ionic bond.

(1) Potassium + Fluorine

(2) Magnesium + Iodine

(3) Sodium + Oxygen

(4) Sodium + Chlorine

(5) Calcium + Chlorine

(6) Aluminum + Chlorine

Bonding Basics - Ionic Bonds

Answer Key/Teacher Notes

Complete the chart for each element.

Element	# of Protons	# of Electrons	# of Valence Electrons	Oxidation Number
Sodium	11	11 -> 10	1	1+
Chlorine	17	17 -> 18	7	1-
Beryllium	4	4 -> 2	2	2+
Fluorine	9	9 -> 10	7	1-
Lithium	3	3 -> 2	1	1+
Oxygen	8	8 -> 10	6	2-
Phosphorus	15	15 -> 18	5	3-

NOTE: I have the students use a red pen/pencil to change the # of electrons to the amount it would be if the valence electrons were removed or added. They can see the difference between the number of protons (+) and electrons (-), which relates to the charge or oxidation number. If the ion has more protons (+), it would be a positive ion. If it has more electrons (-), it would be a negative ion.

Follow your teacher's directions to complete each ionic bond.

(1) Potassium + Fluorine

1- Write the symbols for each element.

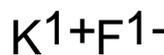
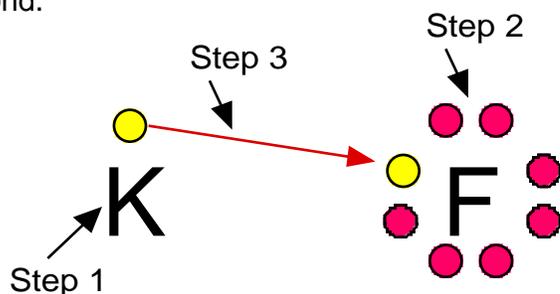
2 - Use Fruity Pebbles (or other cereal/candy with more than one color) to create the Lewis structure for each.

3 - Draw an arrow (or more if needed) to show the transfer of electrons and move the cereal to the new location.

4 - Determine the charge for each ion and write the formula.

5 - Make sure the sum of the oxidation numbers is zero and write the chemical formula.

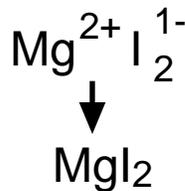
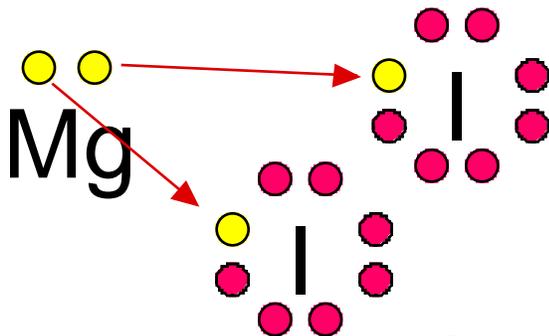
6 - Have the students use a pencil or crayon to draw the electrons as they remove the pieces of cereal.



K would have a charge of 1+ since it lost an electron

Fluorine would have a charge of 1- since it gained an electron.

(2) Magnesium + Iodine



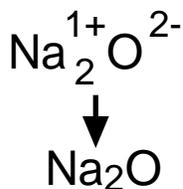
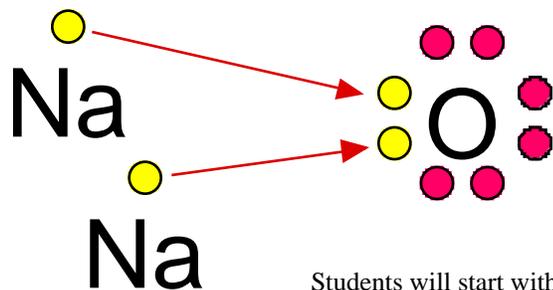
Mg would have a charge of 2+ since it lost two electrons.

Each I ion would have a charge of 1- since each gained an electron. A subscript "2" is used to show that two ions were used in the bond.

Students will start with one magnesium and one iodine atom. Since the oxidation numbers must equal zero, they will need to add another iodine atom.

T. Trimpe 2002

(3) Sodium + Oxygen

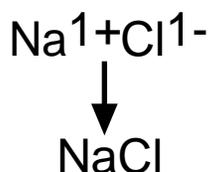
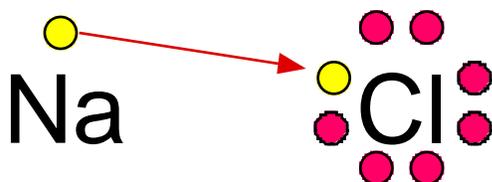


Each Na ion would have a charge of 1+ since each lost an electron. A subscript "2" is used to show that two ions were used in the bond.

The O ion would have a charge of 2- since it gained two electrons.

Students will start with one sodium and one oxygen atom. Since the oxidation numbers must equal zero, they will need to add another sodium atom.

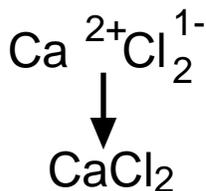
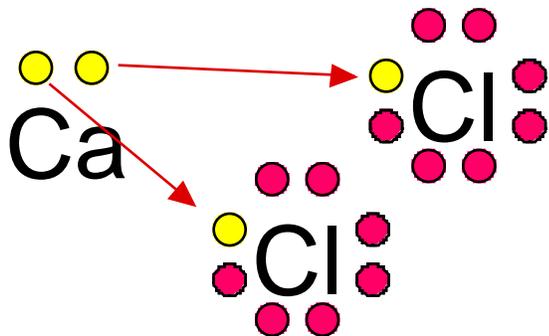
(4) Sodium + Chlorine



Na would have a charge of 1+ since it lost an electron

Cl would have a charge of 1- since it gained an electron.

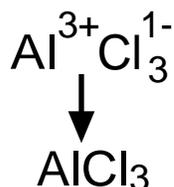
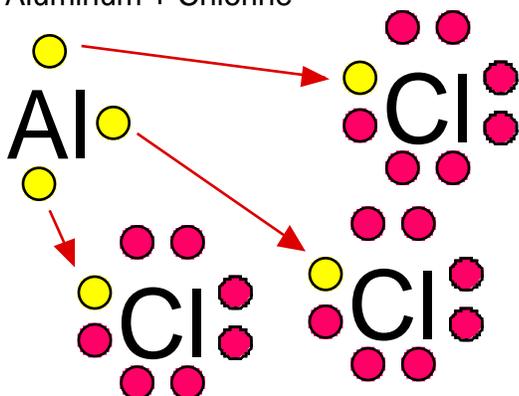
(5) Calcium + Chlorine



Ca would have a charge of 2+ since it lost two electrons.

Each Cl ion would have a charge of 1- since each gained an electron. A subscript "2" is used to show that two ions were used in the bond.

(6) Aluminum + Chlorine



The Al ion would have a charge of 3+ since it lost three electrons.

Each Cl ion would have a charge of 1- since each gained an electron. A subscript "3" is used to show that three ions were used in the bond.