Name: _____ Per.____

Ionic Bonding Basics

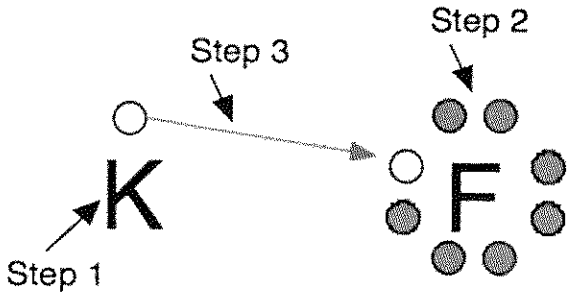
Complete the chart for each element.

Element	# of Protons	Total # of Electrons	# of Valence Electrons in neutral atom	Draw a Lewis Structure Diagram	Change in electron #	Oxidation Number
Sodium (Na)	11	11	1	$\dot{Na}$	loses 1	1+
Chlorine (Cl)	17	17	7	$\dot{Cl}$	gains 1	1–
Calcium (Ca)	20	20	2	Ca	loses 2	2+
Oxygen (O)	8	8	6	O	gains 2	2–
Aluminum (Al)	13	13	3	Al	loses 3	3+
Phosphorus (P)	15	15	5	P	gains 3	3–

Use the space below to write down the steps to complete the example.

Example: Potassium + Fluorine → KF

1. Write the symbols for each element.
2. Draw Lewis structure for each atom shown.
3. Draw an arrow (or more, if needed) to show the transfer of electrons.
4. Determine the new charge/ oxidation numbers for each ion - make sure the sum is zero!
5. Write the formula for the final compound.

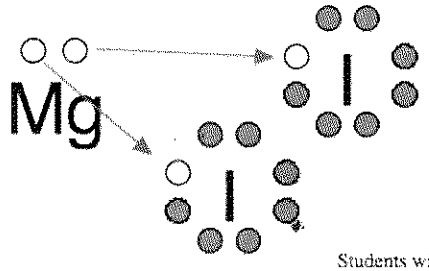


K^{1+} F^{1-}

Remember, the number one is often omitted and 1+ and 1– ions are often just written with a + or – symbol.

KF

1. Magnesium + Iodine



$Mg^{2+} I_2^{1-}$

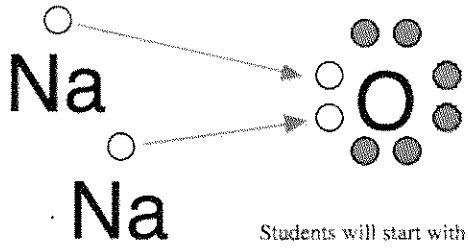
MgI_2

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.

2. Sodium + Oxygen



$Na_2^{1+} O^{2-}$

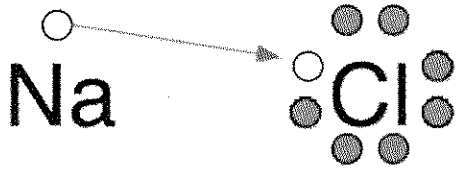
Na_2O

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.

3. Sodium + Chlorine



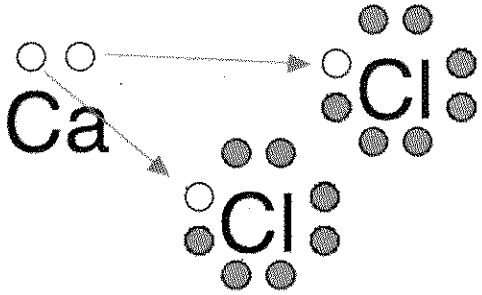
$Na^{1+} Cl^{1-}$

$NaCl$

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

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

4. Calcium + Chlorine



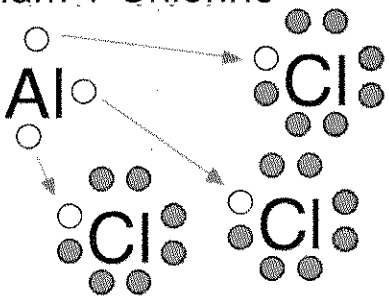
$Ca^{2+} Cl_2^{1-}$

$CaCl_2$

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.

5. Aluminum + Chlorine



$Al^{3+} Cl_3^{1-}$

$AlCl_3$

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.