

Mild Worksheet

Classwork Part 1: Naming Ionic Compounds

How to name an ionic compound:

Ex: Naming "NaCl"

Step 1: Write the name of the metal. "Sodium"

Step 2: Write the name of the non-metal, but change the ending to "-ide": "Chloride" (instead of "Chlorine")

***The name of NaCl is "Sodium Chloride."**

***The name of LiO is "Lithium Oxide."**

Write the name of each ionic compound:

1. MgCl _____

2. LiF _____

3. KBr _____

4. CsI _____

5. HCl _____

6. BeO _____

7. MgS _____

8. CaO _____

9. FeO _____

10. HF _____

Classwork Part 2: Ionic Compound Formulas and Lewis Structures

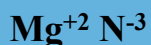
Shortcut: The “Criss-Cross Method”

The number of Metal atoms is the same as the charge of the non-metal and vice versa.

Ex 1: Write a balanced formula showing the charges and number of atoms for the ionic compound formed from Mg and N.

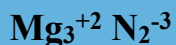
Step 1: Write the charge you expect each atom to have based on the number of valence electrons

Mg atoms have two valence e⁻'s so their ions will have a charge of +2.
N atoms have five valence e⁻'s so their ions will have a charge of -3.



Step 2: The #of metal atoms times their charge must equal the # of non-metal atoms times their charge.

Three Mg atoms with a +3 charge have a total charge of +6.
Two N atoms with a -3 charge have a total charge of -6.



Step 3: Clean it up! Re-write the formula without the charges!



Try it out!!!

Example: Write a balanced formula showing the charges and number of atoms for the ionic compound formed from Be and O.

Step 1: Write the charge you expect each atom to have based on the number of valence electrons

Be O

Step 2: The #of metal atoms times their charge must equal the # of non-metal atoms times their charge.

Shortcut: If the metal and non-metal atoms have the same charge, you only need one atom of each.

Be O

Step 3: Clean it up! Write out the proper formula.

Practice:

1. Each pair of elements includes a metal and non-metal that will form an ionic bond.

a) Write the charge that each atom will have.

b) Write the number of atoms needed for each element based on the rules above.

sodium chloride _____	magnesium sulfide _____	beryllium phosphide _____
calcium fluoride _____	potassium oxide _____	strontium bromide _____
potassium iodide _____	lithium bromide _____	barium nitride _____

Look back at your notes! Each pair of elements includes a metal and non-metal that will form an ionic bond. Use the reverse criss-cross method in order to find the charges of each of the atoms in the following pairs. Then, write the name of each of the ionic compounds.

a) Write the charge that each atom will have.

b) Write the names of each ionic compound.

BaCl_2 _____	AlI_3 _____	Li_3P _____
Na_3N _____	K_2S _____	Al_2O_3 _____
Na_2O _____	RbBr _____	Ca_3P_2 _____

Multiple Choice Practice

- A barium atom attains a stable electron configuration when it bonds with....
(Annotation - write the charge and number of atoms needed for each element)
 - one chlorine atom
 - two chlorine atoms
 - one sodium atom
 - two sodium atoms
- In which compound have electrons been transferred to the oxygen atom? (which represents an ionic compound made of a metal and a non-metal? – label all elements as M or NM)
 - CO₂
 - NO₂
 - N₂O
 - Na₂O
- Which formula represents an ionic compound?
(Hint: Think about each element to determine which has the M and NM pair)
 - NaCl
 - N₂O
 - HCl
 - H₂O
- Which elements combine by forming an ionic bond?
(Hint: Think about each element to determine which has the M and NM pair)
 - sodium and potassium
 - sodium and oxygen
 - carbon and oxygen
 - carbon and sulfur
- Which type of bond is formed when electrons are transferred from one atom to another?
 - covalent
 - ionic
 - hydrogen
 - metallic
- Base your answer to the question on the balanced equation below.
 $2\text{Na}(s) + \text{Cl}_2(g) \rightarrow 2\text{NaCl}(s)$
Explain, in terms of electrons, why the bonding between NaCl is ionic?

- If X₁Cl₂ represents an ionic compound where X stands for an unknown metal, which element could be X?
(Annotation: What charge will the carbon atoms have? What charge must “X” have?)
 - N
 - Li
 - Mg
 - F
- If X₂O₁ represents an ionic compound where X stands for an unknown metal, element X could be a member of which group? (Annotation: What charge will the carbon atoms have? What charge must “X” have?)
 - Group 1
 - Group 2
 - Group 16
 - Group 1