Naming Compounds

Compounds

Guided Instruction:
Naming Compounds

Review: What is an ionic compound?

- Formed when electrons are **transferred** between a metal and nonmetal

Review: What is a covalent compound?

- Formed when electrons are **shared** between a nonmetals

A. Naming covalent compounds

1. Use a **prefix** to indicate the **number** of atoms of each element

# of atoms	prefix
1	mono-
2	di-
3	tri-
4	tetra-
5	penta-
6	hexa-

A. Naming covalent compounds

2. Replace the ending of the 2nd element with –ide.

- Count 2 vowels back from the end of the nonmetal and remove all those letters
- Add **ide**

Ex = N_2O_3

# of atoms	prefix
1	mono-
2	di-
3	tri-
4	tetra-
5	penta-
6	hexa-

B. Naming covalent compounds

2. Replace the ending of the 2nd element with –ide.

- Count 2 vowels back from the end of the nonmetal and remove all those letters
- Add **ide**

Ex = N_2O_3 = Dinitrogen Trioxide

# of atoms	prefix
1	mono-
2	di-
3	tri-
4	tetra-
5	penta-
6	hexa-

B. Naming covalent compounds

3. **Prefix EXCEPTION:**

   a. **NEVER use mono on the 1st element!!!**

Example = CO

~~Mono~~carbon Monoxide

Carbon Monoxide

# of atoms	prefix
1	mono-
2	di-
3	tri-
4	tetra-
5	penta-
6	hexa-

Example #1

Covalent Compound = H_2O

1. How many atoms do I have of Hydrogen?
2. How many atoms do I have of Oxygen?
3. What will the first element name be changed to?
4. What will the last element name be changed to?
5. Final answer?

Example #1

Covalent Compound = H_2O

1. How many atoms do I have of Hydrogen? 2
2. How many atoms do I have of Oxygen?
3. What will the first element name be changed to?
4. What will the last element name be changed to?
5. Final answer?

Example #1

Covalent Compound = H_2O

1. How many atoms do I have of Hydrogen? 2
2. How many atoms do I have of Oxygen? 1
3. What will the first element name be changed to?
4. What will the last element name be changed to?
5. Final answer?

Example #1

Covalent Compound = H_2O

1. How many atoms do I have of Hydrogen? 2
2. How many atoms do I have of Oxygen? 1
3. What will the first element name be changed to? Dihydrogen
4. What will the last element name be changed to?
5. Final answer?

Example #1

Covalent Compound = H_2O

1. How many atoms do I have of Hydrogen? 2
2. How many atoms do I have of Oxygen? 1
3. What will the first element name be changed to? Dihydrogen
4. What will the last element name be changed to? Monoxide
5. Final answer?

Example #1

Covalent Compound = H_2O

1. How many atoms do I have of Hydrogen? 2
2. How many atoms do I have of Oxygen? 1
3. What will the first element name be changed to? Dihydrogen
4. What will the last element name be changed to? Oxide
5. Final answer? Dihydrogen Monoxide

Snappy Practice!

In the next **4** minutes, use your notes to name the following covalent compounds:

1. CH_4 =
2. HI =
3. N_2O_3 =
4. PH_3 =

Snappy Practice!

In the next **4** minutes, use your notes to name the following covalent compounds:

1. CH_4 =Carbon tetrahydride
2. HI =
3. N_2O_3 =
4. PH_3 =

Snappy Practice!

In the next **4** minutes, use your notes to name the following covalent compounds:

1. CH_4 =Carbon tetrahydride
2. HI = Hydrogen monoiodide
3. N_2O_3 =
4. PH_3 =

Snappy Practice!

In the next **4** minutes, use your notes to name the following covalent compounds:

1. CH_4 =Carbon tetrahydride
2. HI = Hydrogen monoiodide
3. N_2O_3 = Dinitrogen trioxide
4. PH_3 =

Snappy Practice!

In the next **4** minutes, use your notes to name the following covalent compounds:

1. CH_4 = Carbon tetrahydride
2. HI = Hydrogen monoiodide
3. N_2O_3 = Dinitrogen trioxide
4. PH_3 = Phosphorous trihydride

B. Naming ionic compounds

Just like covalent, WITHOUT the prefixes!

1. Write the metal first
2. Write the nonmetal second and change the ending to –ide

Practice

- What is the name of the compound formed between

1. LiCl
2. Al_2O_3
3. Mg_3N_2

Practice

- What is the name of the compound formed between

1. LiCl Lithium chloride
2. Al_2O_3
3. Mg_3N_2

Practice

- What is the name of the compound formed between

1. LiCl Lithium chloride
2. Al_2O_3 Aluminum oxide
3. Mg_3N_2

Practice

- What is the name of the compound formed between

1. LiCl Lithium chloride
2. Al_2O_3 Aluminum oxide
3. Mg_3N_2 Magnesium Nitride

In Summary…

- After your notes, write the following heading and answer the questions in complete sentences :

<u>Summary</u>

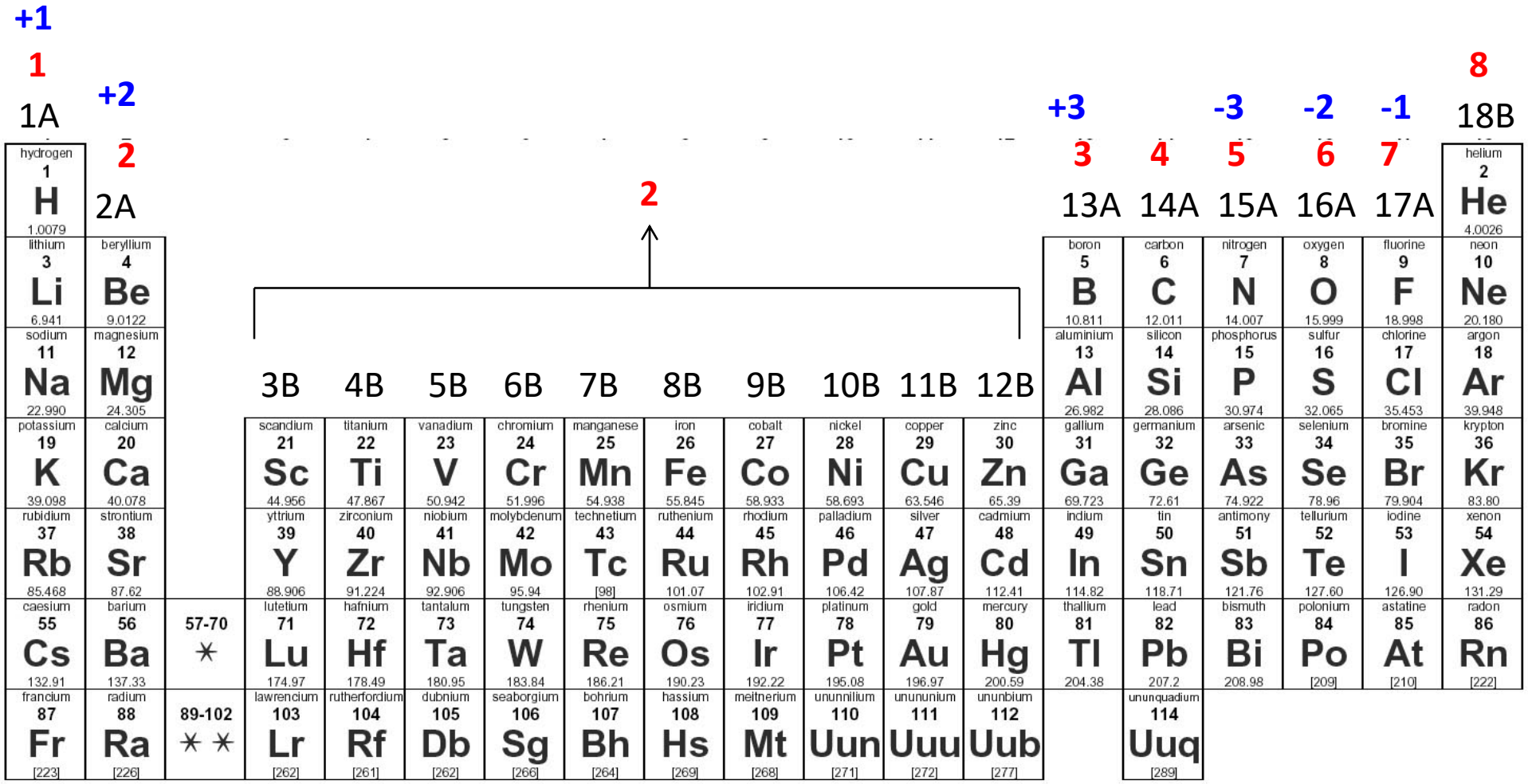
1. What was the main idea of today’s lesson?
2. What are three things that you learned?
3. What is one area you struggled with?

Writing Compound Formulas

Compounds

Guided Instruction:
Writing Compound Formulas

Review: What is the pattern for ion formation on the periodic table?



A. Ionic Compound Formulas

1. Write the element symbol AND ION CHARGE for the metal first
2. Write the element symbol AND ION CHARGE for the nonmetal
3. Criss-cross the numbers - NOT the charges

- Example: Magnesium chloride

$$Mg^{+2} \quad Cl^{-1}$$

A. Ionic Compound Formulas

1. Write the element symbol AND ION for the metal first
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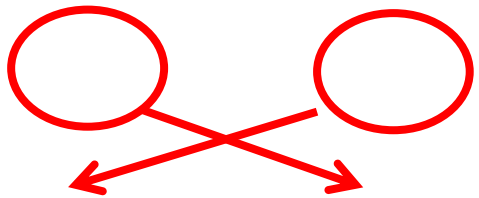
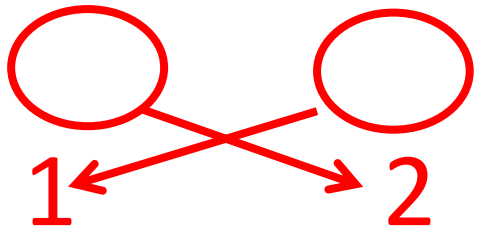


A. Ionic Compound Formulas

1. Write the element symbol AND ION for the metal first
2. Write the element symbol AND ION for the nonmetal
3. Criss-cross the numbers NOT the charges

- Example: Mg and Cl

$$Mg^{+2} \quad Cl^{-1}$$

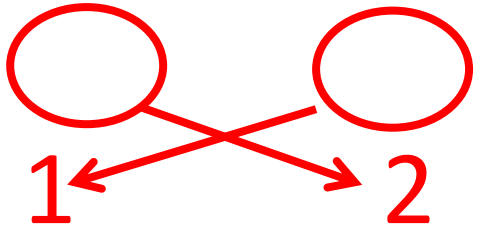


A. Ionic Compound Formulas

1. Write the element symbol AND ION for the metal first
2. Write the element symbol AND ION for the nonmetal
3. Criss-cross the numbers NOT the charges

- Example: Mg and Cl

Mg^{+2} Cl^{-1}



$= Mg_1Cl_2 = MgCl_2$

Practice

- Write the formula for the following ionic compounds:

1. Lithium oxide
2. Aluminum oxide
3. Magnesium nitride

Practice

- Write the formula for the following ionic compounds:

1. Lithium oxide Li_2O
2. Aluminum oxide
3. Magnesium nitride

Practice

- Write the formula for the following ionic compounds:

1. Lithium oxide Li_2O
2. Aluminum oxide Al_2O_3
3. Magnesium nitride

Practice

- Write the formula for the following ionic compounds:

1. Lithium oxide Li_2O
2. Aluminum oxide Al_2O_3
3. Magnesium nitride Mg_3N_2

B. Ionic Compound with Transition Metals

Example: Cobalt (II) fluoride

1. Write the metal ion with charge
   a. Use the roman numeral for the charge
      - Cobalt has a +2 charge
2. Write the nonmetal ion
3. Crisscross the numbers

Transition Metal Practice

- Write the formula for the following compounds:

1. Cobalt (II) fluoride
2. Iron (III) bromide
3. Lead (IV) sulfide

Transition Metal Practice

- Write the formula for the following compounds:

1. Cobalt (II) fluoride = CoF_2
2. Iron (III) bromide
3. Lead (IV) sulfide

Transition Metal Practice

- Write the formula for the following compounds:

1. Cobalt (II) fluoride = CoF_2
2. Iron (III) bromide = $FeBr_3$
3. Lead (IV) sulfide

Transition Metal Practice

- Write the formula for the following compounds:

1. Cobalt (II) fluoride = CoF_2
2. Iron (III) bromide = $FeBr_3$
3. Lead (IV) sulfide = Pb_2S_4

C. Covalent Compound Formulas

1. Write the **symbol** for each element
2. Use the *prefix* to determine **how many atoms** you have and write as a subscript

# of atoms	prefix
1	mono-
2	di-
3	tri-
4	tetra-
5	penta-
6	hexa-

Example

Covalent Compound = Carbon Tetrachloride

1. What are the two elements involved?

2. What are the symbols for each element?
3. How many atoms do I have of the first element?
4. How many atoms do I have of the second element?
5. Final answer?

Example

Covalent Compound = Carbon Tetrachloride

1. What are the two elements involved?

   Carbon and Chlorine

2. What are the symbols for each element?
3. How many atoms do I have of the first element?
4. How many atoms do I have of the second element?
5. Final answer?

Example

Covalent Compound = Carbon Tetrachloride

1. What are the two elements involved?

   Carbon and Chlorine

2. What are the symbols for each element? C, Cl
3. How many atoms do I have of the first element?
4. How many atoms do I have of the second element?
5. Final answer?

Example

Covalent Compound = Carbon Tetrachloride

1. What are the two elements involved?

   Carbon and Chlorine

2. What are the symbols for each element? C, Cl
3. How many atoms do I have of the first element? 1
4. How many atoms do I have of the second element?
5. Final answer?

Example

Covalent Compound = Carbon Tetrachloride

1. What are the two elements involved?

   Carbon and Chlorine

2. What are the symbols for each element? C, Cl
3. How many atoms do I have of the first element? 1
4. How many atoms do I have of the second element? 4
5. Final answer?

Example

Covalent Compound = Carbon Tetrachloride

1. What are the two elements involved?

   Carbon and Chlorine

2. What are the symbols for each element? C, Cl
3. How many atoms do I have of the first element? 1
4. How many atoms do I have of the second element? 4
5. Final answer? CCl_4

Snappy Practice!

In the next **4** minutes, use your notes to write the formula for the following covalent compounds:

1. Carbon Dioxide
2. Triphosphorus Monochloride
3. Dinitrogen Trichloride
4. Nitrogen Dioxide

Snappy Practice!

In the next **4** minutes, use your notes to write the formula for the following covalent compounds:

1. Carbon Dioxide = CO_2
2. Triphosphorus Monochloride =
3. Dinitrogen Trichloride =
4. Nitrogen Dioxide =

Snappy Practice!

In the next **4** minutes, use your notes to write the formula for the following covalent compounds:

1. Carbon Dioxide = CO_2
2. Triphosphorus Monochloride = P_3Cl
3. Dinitrogen Trichloride =
4. Nitrogen Dioxide =

Snappy Practice!

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1. Carbon Dioxide = CO_2
2. Triphosphorus Monochloride = P_3Cl
3. Dinitrogen Trichloride = N_2Cl_3
4. Nitrogen Dioxide =

Snappy Practice!

In the next **4** minutes, use your notes to write the formula for the following covalent compounds:

1. Carbon Dioxide = CO_2
2. Triphosphorus Monochloride = P_3Cl
3. Dinitrogen Trichloride = N_2Cl_3
4. Nitrogen Dioxide = NO_2

In Summary…

- After your notes, write the following heading and answer the questions in complete sentences :

<u>Summary</u>

1. What was the main idea of today’s lesson?
2. What are three things that you learned?
3. What is one area you struggled with?