

Station 1—Nomenclature

Label each compound "I" for ionic and "M" for molecular.

Name the following compounds:

1. K_2CO_3
2. $MgCl_2$
3. N_2S_5
4. $Mn(NO_3)_3$
5. $FePO_4$
6. P_4O_{10}
7. SF_4
8. Cu_2S

Write the formulas for the following compounds:

9. Xenon trioxide
10. Ammonium sulfate
11. Copper (I) carbonate
12. Dinitrogen monoxide
13. Bromine pentoxide
14. Iron (III) oxide
15. Zinc chloride

Station 2—Ionic compounds

1. How are ionic bonds formed? What happens to the electrons? What makes sodium and chlorine stick together?
2. When do you use roman numerals in a name?
3. Complete the following for aluminum oxide:
 - a. Write the formula
 - b. Draw the Lewis structures showing the transfer of electrons
 - c. Show the final product with the charges and electrons
4. Complete the following for potassium nitride:
 - a. Write the formula
 - b. Draw the Lewis structures showing the transfer of electrons
 - c. Show the final product with the charges and electrons

Station 3—Ionic vs. molecular properties

Complete the chart comparing and contrasting properties of ionic and molecular compounds. Then complete the side titled “Formation of Compounds.”

Station 4—Covalent bonding

1. Complete the following for phosphorus trichloride:
 - a. Draw the dot structure
 - b. What is this molecule's shape?
 - c. Is this molecule polar or nonpolar?
 - d. What intermolecular forces hold this molecule together?

2. Complete the following for silicon dioxide:
 - a. Draw the dot structure
 - b. What is this molecule's shape?
 - c. Is this molecule polar or nonpolar?
 - d. What intermolecular forces hold this molecule together?

3. Complete the following for dihydrogen monosulfide:
 - a. Draw the dot structure
 - b. What is this molecule's shape?
 - c. Is this molecule polar or nonpolar?
 - d. What intermolecular forces hold this molecule together?

Station 5—Intermolecular forces

1. Put the following compounds in order from highest melting point to lowest melting point: nitrogen trihydride, calcium fluoride, carbon dioxide, and oxygen dichloride.
2. Thoroughly explain your answer to number 1. Why did you place the compounds in that order?

Station 1—Nomenclature

Label each compound "I" for ionic and "M" for molecular.

Name the following compounds:

- I 1. K_2CO_3 Potassium carbonate
- I 2. $MgCl_2$ magnesium chloride
- M 3. N_2S_5 dinitrogen pentasulfide
- I 4. $Mn(NO_3)_3$ Manganese (III) nitrate
- I 5. $FePO_4$ Iron (III) phosphate
- M 6. P_4O_{10} Tetraphosphorus decoxide
- M 7. SF_4 Sulfur tetrafluoride
- I 8. Cu_2S Copper (I) sulfide

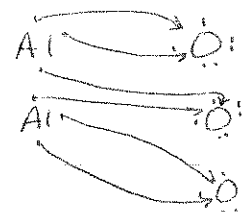
Write the formulas for the following compounds:

- M 9. Xenon trioxide XeO_3
- I 10. Ammonium sulfate $(NH_4)_2SO_4$
- I 11. Copper (I) carbonate Cu_2CO_3
- M 12. Dinitrogen monoxide N_2O
- M 13. Bromine pentoxide Br_2O_5
- I 14. Iron (III) oxide Fe_2O_3
- I 15. Zinc chloride $ZnCl_2$

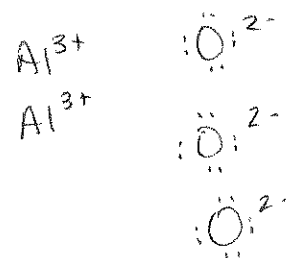
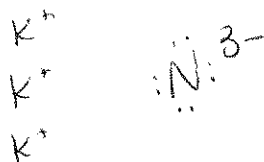
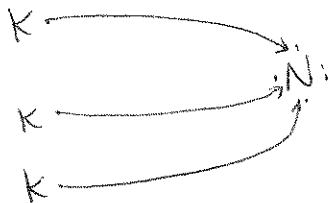
Station 2—Ionic compounds

- How are ionic bonds formed? What happens to the electrons? What makes sodium and chlorine stick together? Bonds formed when one atom gives up e^- and another gains e^- . The \oplus and \ominus charged ions are strongly attracted.
- When do you use roman numerals in a name? For metals that don't have the same charge all the time (like the +1, +2, +3 column)
- Complete the following for aluminum oxide:

- Write the formula Al_2O_3
- Draw the Lewis structures showing the transfer of electrons
- Show the final product with the charges and electrons



- Complete the following for potassium nitride:
 - Write the formula K_3N
 - Draw the Lewis structures showing the transfer of electrons
 - Show the final product with the charges and electrons



Station 4—Covalent bonding

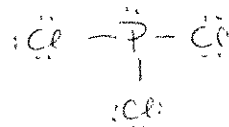
1. Complete the following for phosphorus trichloride:

a. Draw the dot structure

b. What is this molecule's shape? *Pyramidal*

c. Is this molecule polar or nonpolar? *Polar*

d. What intermolecular forces hold this molecule together? *dipole forces*



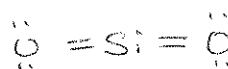
2. Complete the following for silicon dioxide:

a. Draw the dot structure

b. What is this molecule's shape? *Linear*

c. Is this molecule polar or nonpolar? *nonpolar*

d. What intermolecular forces hold this molecule together? *dispersion*



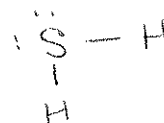
3. Complete the following for dihydrogen monosulfide:

a. Draw the dot structure

b. What is this molecule's shape? *Bent*

c. Is this molecule polar or nonpolar? *polar*

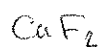
d. What intermolecular forces hold this molecule together? *dipole*



Station 5—Intermolecular forces

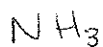
1. Put the following compounds in order from highest melting point to lowest melting point: nitrogen trihydride, calcium fluoride, carbon dioxide, and oxygen dichloride.
2. Thoroughly explain your answer to number 1. Why did you place the compounds in that order?

highest MP



ionic IMF

strongest attraction



H-bonds



poor
dipole

lowest MP



dispersion

weakest attraction