Covalent Compounds

Naming

- Covalent compounds are composed of two non-metals.
- Covalent bonds involve the sharing of electrons between atoms.

RULES:
1. Write the most metallic element first.
2. Use Greek prefixes to indicate the number of atoms of each element present.
3. If there is only one atom of the first element, do not use a prefix.
4. The least metallic element is given an "ide".

Greek Prefixes

1 = mono	6 = hexa
2 = di	7 = hepta
3 = tri	8 = octa
4 = tetra	9 = nona
5 = penta	10 = deca

Example:

CO	carbon monoxide
P_2O_3	diphosphorus trioxide
SiO_2	silicon dioxide

Practice:

Name the following compounds:

1. N_2O_3 _____

2. $AsBr_3$ _____

3. SiF_4 _____

4. CCl_4 _____

5. $SeCl_6$ _____

6. Te_3N_4 _____

7. CH_4 _____

8. Si_3N_4 _____

9. N_2O_5 _____

10. TeF_2 _____

11. As_2O_5 _____

12. Si_3S _____

13. SeF_2 _____

14. AsI_3 _____

15. PCl_3 _____

16. CO_2 _____

Covalent Compounds

Writing Formulae

- To write the formula for covalent compounds, you do not need to know the combining capacity of the elements involved. You need only know their Greek prefixes.

RULES:
1. Write the symbol for the metallic element first.
2. Write the symbol for the least metallic element second.
3. Use the Greek prefixes preceding the name of each element to determine the subscripts required.

Example:

Name	Formula
carbon disulphide	CS_2
diarsenic pentaoxide	As_2O_5
phosphorus trichloride	PCl_3

Practice:

Give the formula for the following:

1. carbon tetrafluoride _____

2. diboron trioxide _____

3. carbon monoxide _____

4. diphosphorus pentaoxide _____

5. arsenic tribromide _____

6. tellurium dichloride _____

7. silicon disulphide _____

8. carbon tetraastatide _____

9. sulphur hexachloride _____

10. selenium hexafluoride _____

11. carbon dioxide _____

12. dinitrogen trioxide _____

13. trisilicon tetraoxide _____

14. tetraphosphorus dichloride _____

Acids

Naming

- Acids can be recognized from the hydrogen atom at the beginning of the formula.
- Naming the acid is dependant on the anion that is present.

Ending of anion:	Naming of acid:
"ide"	hydro _____ ic acid
"ate"	_____ ic acid
"ite"	_____ ous acid

Example:

	anion	**acid**
HCl	chlor**ide**	**hydro**chlor**ic acid**
HNO_3	nitr**ate**	nitr**ic acid**
H_2SO_3	sulph**ite**	sulphur**ous acid**

Hint: I **ate** and acid and it was **ic**ky!
I only b**ite** things that are delici**ous**!

Practice:

Name the following compounds:

1. HBr _____
2. H_2SO_4 _____
3. H_2CO_3 _____
4. HF _____
5. $HClO_2$ _____
6. HNO_2 _____
7. H_3BO_3 _____
8. HIO_3 _____
9. HCl _____
10. HNO_3 _____

Acids

Writing Formulae

- Once again, you must look at the anion that is in the acid.

RULES:
1. Determine from the name which anion is in the acid.
2. Write the hydrogen ion and its combining capacity first.
3. Write the anion with its combining capacity second.
4. Criss cross the combining capacities and reduce.

Example:

	anion	
Phosphoric acid	phosphate	$H^{+1}\ (PO_4)^{-3} = H_3PO_4$

Practice:

Give the formula for the following:

1. chloric acid _____
2. oxalic acid _____
3. hydroiodic acid _____
4. acetic acid _____
5. perchloric acid _____
6. iodic acid _____
7. bisulphuric acid _____
8. carbonic acid _____
9. chromic acid _____

Part A: Name the following covalent compounds.

1. CO _____
2. CO_2 _____
3. N_2O_3 _____
4. N_2 _____
5. NP _____
6. SCl_2 _____
7. P_2O_5 _____
8. NBr_3 _____
9. CI_4 _____
10. CCl_4 _____
11. PF_5 _____
12. PF_3 _____
13. OS _____
14. SeF_2 _____
15. $TeBr_2$ _____
16. P_2S_5 _____
17. C_3N_4 _____
18. F_2 _____
19. CH_4 _____
20. PH_3 _____

Part B: Write the Chemical Formula for each of the following compounds.

1. carbon tetrafluoride _____
2. silicon dioxide _____
3. dinitrogen trisulphide _____
4. phosphorus mononitride _____
5. hydrogen gas _____
6. carbon disulphide _____
7. nitrogen trichloride _____
8. silicon tetrabromide _____
9. carbon dioxide _____
10. nitrogen trifluoride _____
11. boron trisulphide _____
12. sulphur trioxide _____
13. selenium tetrafluoride _____
14. diphosphorus pentasulphide _____
15. xenon tetrafluoride _____
16. sulfur dibromide _____
17. carbon tetrachloride _____
18. oxygen gas _____
19. fluorine gas _____
20. dinitrogen tetroxide _____

1. Nitric acid	
2. Chloric acid	
3. Acetic acid	
4. Hydrobromic acid	
5. Sulfurous acid	
6. Chlorous acid	
7. Hydrochloric acid	
8. Phosphoric acid	
9. Nitrous acid	
10. Hydrofluoric acid	
11. Perchloric acid	
12. Hydroiodic acid	
13. Phosphorous acid	
14. Carbonic acid	
15. Sulfuric acid	

16. $HClO_4$	
17. H_3PO_4	
18. $HCl_{(aq)}$	
19. H_2SO_4	
20. HNO_2	
21. $HI_{(aq)}$	
22. $HC_2H_3O_2$	
23. $HF_{(aq)}$	
24. H_3PO_3	
25. $HClO_3$	
26. H_2CO_3	
27. H_2SO_3	
28. $HClO_2$	
29. HNO_3	
30. $HBr_{(aq)}$	