

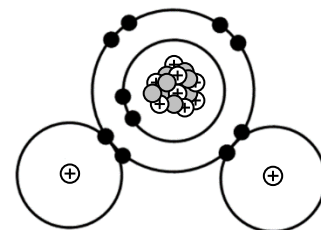
Covalent naming and formulas

Chemical reactions occur when atoms gain, lose, or share electrons.

Sharing electrons creates a covalent bond

Nonmetals can share electrons to form a covalent bond.

This creates a _____.



Determine if a compound is ionic or covalent.

What elements do covalent compounds contain?

Covalent compounds contain only _____.

What elements do ionic compounds contain?

Ionic compounds contain a _____ and a _____.

Decide whether the compounds on your notes are ionic or covalent.

CO₂_____
$$\text{N}_2\text{O} \quad \underline{\hspace{1cm}}$$

PtO _____

HgCl₂ _____

SiO₂_____ SrBr_2

There are 7 elements that exist in nature as *diatomic* molecules.

What elements exist as diatomic molecules?

There are millions of covalent compounds. These can be classified into many different types of _____. Each type of compound has a different set of rules for naming.

Binary Covalent Compounds

What does the word binary mean? Binary means _____.

Binary covalent compounds are between _____.

Nonmetals can share electrons in many different ways. This means that two nonmetals can create _____ compounds together.

carbon and oxygen

phosphorous and chlorine

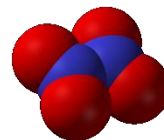
nitrogen and oxygen

Each of these contains a different _____ of elements. Because of this, we have to make sure that the name of the compound explains the correct ratio.

To show the correct ratio of elements, we use _____.

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

Steps for Naming Binary Covalent Compounds



Example: N_2O_4

Step 1: Write the name of the first _____.

Step 2: Write the name of the second nonmetal changing its ending to _____.

Step 3: Add prefixes to specify _____ of each element are present.

Answer: _____

Rules for Using Prefixes

Rule 1: Prefixes are only for _____ compounds or greater.

Rule 2: The prefix _____ is never used on the first element of a binary covalent compound. Without a prefix it is assumed that there is only 1.

Example: CO_2 is _____, and not monocarbon dioxide.

Rule 3: Remove the -o or -a from a prefix before adding it to _____.

Example: CO is _____, and not carbon monoxide.

How would you write each of the prefixes in front of oxide?

Remember: Remove the -o or -a from a prefix before adding it to oxide. Leave -i alone.

mono- _____

di- _____

tri- _____

tetra- _____

penta- _____

hexa- _____

hepta- _____

octa- _____

nona- _____

deca- _____

Name the binary covalent compounds.

CO_2 : _____

CS_2 : _____

PBr_3 : _____

PBr_5 : _____

P_2S_5 : _____

N_2S : _____

SiS_2 : _____

NBr_3 : _____

N_2Cl_4 : _____

Because of the prefixes, it is very easy to go from the name of a binary covalent compound to its formula.

Example: dinitrogen tetrafluoride

Step 1: Write the symbol of the first nonmetal and the _____ that matches the prefix.

Step 2: Write the symbol of the second nonmetal and the subscript that matches the prefix.

Answer: _____

Write the formulas of the binary covalent compounds in your notes.

What is the formula of each of the binary covalent compounds named below.

carbon tetrachloride _____

iodine heptafluoride _____

phosphorous pentachloride _____

dinitrogen tetroxide _____

dinitrogen monoxide _____

phosphorous trichloride _____

carbon monosulfide _____

carbon monoxide _____

boron trihydride _____

iodine monochloride _____

disulfur hexabromide _____

tetrasulfur tetranitride _____

silicon disulfide _____

dihydrogen monoxide _____

phosphorous triiodide _____

chlorine pentafluoride _____

nitrogen trichloride _____

nitrogen dioxide _____

Once you decide if a compound is _____ or _____ you know whether or not to use prefixes.

Only _____ use PREFIXES!

Do NOT make the mistake of using prefixes with _____ compounds. You will need to be able to make this choice in upcoming assessments!