7.P.2A.4

Construct explanations for how compounds are classified as ionic (metal bonded to nonmetal) or covalent (nonmetals bonded together) using chemical formulas.

Element	Symbol	Element	Symbol
Hydrogen	H	Silicon	Si
Carbon	C	Copper	Cu
Nitrogen	N	Aluminum	Al
Oxygen	O	Silver	Ag
Chlorine	Cl	Gold	Au
Magnesium	Mg	Iron	Fe
Zinc	Zn	Helium	He
Calcium	Ca	Potassium	K
Phosphorus	P	Sodium	Na
Iodine	I	Fluorine	F

Elements VS. Compounds

- What is the difference between the two?

Chemical Formulas

- Chemical Formulas use element symbols from the periodic table and numerical subscripts to depict the name and number of atoms of each element in the compounds
- Examples:
- Water (H_2O)
- Salt (NaCl)
- Glucose ($C_6H_{12}O_6$)

Subscripts

- In a chemical formula, the numbers or subscripts show how many of each kind of atom are in the compound.
- Subscripts are written to the lower right of the element symbol
- If NO subscript is written, only ONE atom of that element is part of the compound

- Look at H_2O
- How many Hydrogen atoms are there?
- How many oxygen atoms are there?

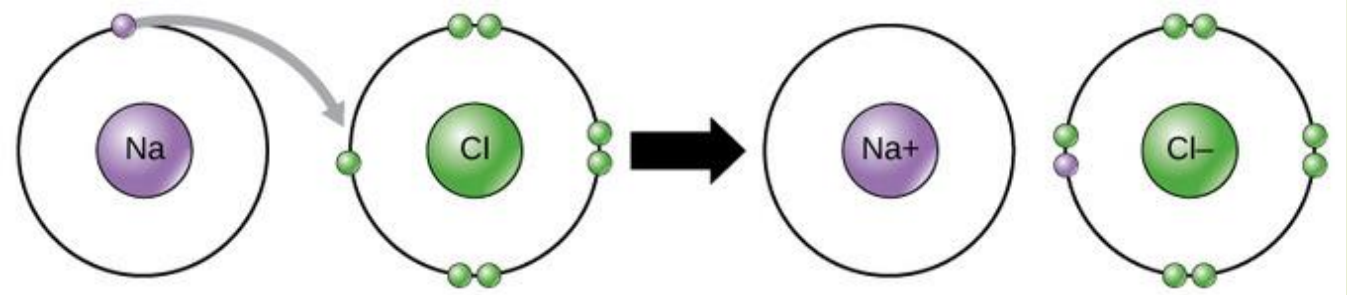
Diatomic Molecules

- N_2
- O_2
- F_2
- Cl_2
- Br_2
- I_2
- H_2

- Are all diatomic molecules where all of the atoms of the molecule are the same element.
- This means nitrogen gas will always have a subscript of 2

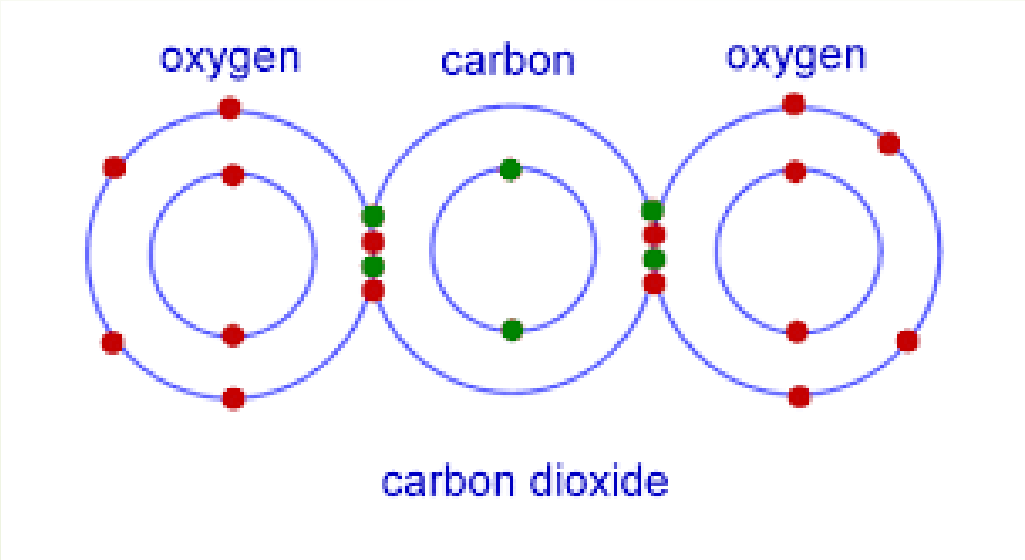
Ionic Bonds

- Ionic bonds are formed when metals and nonmetals chemically bond to form a new substance.
- In ionic bonds, electrons are transferred from the metals to the nonmetals.



Covalent Bonds

- Covalent bonds are formed when nonmetals bond with other nonmetals.
- In covalent bonds, electrons are shared.



Chemical Formula	Common name	Classification
NaCl	Table Salt	Ionic
H_2O	Water	Covalent
$C_6H_{12}O_6$	Simple Sugar	Covalent
O_2	Oxygen Gas	Covalent
CO_2	Carbon Dioxide	Covalent
N_2	Nitrogen Gas	Covalent
Fe_2O_3	Rust	Ionic