

Worksheet 1 | The Secondary Stage of (6-8)

1st Semester | 2023-2024

Subject: Chemistry

Chapter: 10

Objectives:

- To be able to define atoms and ions
- To be able to draw the atomic configuration of different atoms and ions
- To be able to name different ionic compounds.
- To be able to identify covalent compounds.
- To be able to draw a dot and cross diagram

What are ions?

Ions are atoms or a group of atoms that have a positive or a negative charge.

Atoms are more stable when they have full outer shells. In order to reach this stability, they gain or lose electrons in a chemical reaction, forming IONS.

What are the differences between positive and negative ions?

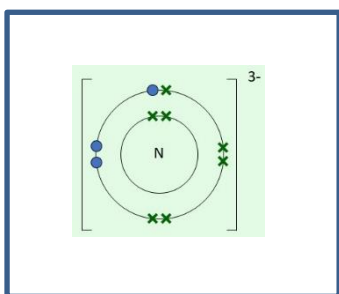
	Positive ions	Negative ions
Net Charge	Positive net charge ion.	Negative net charge ion.
Formed by	They are formed by losing electrons.	They are formed by gaining electrons
Element type	Metal	Non-metal

Activity one: Complete the following table.

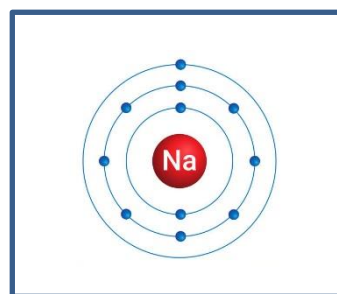
Element's symbol	Atomic configuration	Number of electrons lost or gained	Number of electrons in the ion	Number of protons in the ion	Charge of the ion	ion
K	2,8,8,1	1	18	19	+1	K^{+1}
F	2,7	1	10	9	-1	F^{-1}
Mg	2,8,2	2	10	12	+2	Mg^{+2}
Cl	2,8,7	1	18	17	-1	Cl^{-1}

Activity two: Draw the atomic configuration of the following:

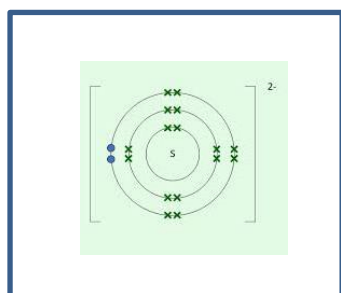
Nitride ion



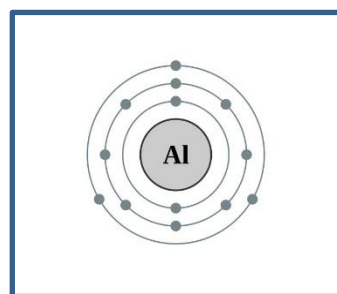
sodium atom



Sulfide ion



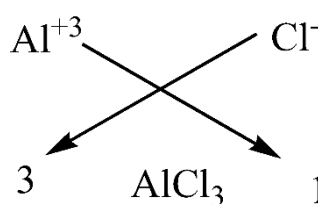
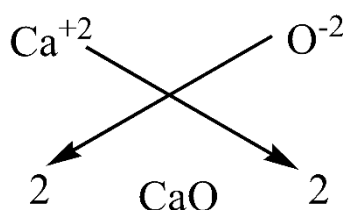
Aluminum atom



When elements (a metal and a non-metal) combine with each other, they will form an ionic compound.

To write the chemical formula of the ionic compound, follow these steps:

1. Write the symbol and charge of the (metal) first and the (nonmetal) second.
2. Transpose only the number of the positive charge to become the subscript of the non-metal and the number only of the negative charge to become the subscript of the metal



Activity Three: Draw a diagram to represent the bonding between sodium atom and chlorine atom

Not included in the first exam

Activity four: Fill in the table below with the missing information.

Reactants	chemical formula	Name of ionic compound
$\text{Ca}^{+2} + \text{Cl}^{-1}$	CaCl_2	Calcium chloride
$\text{Mg}^{+2} + \text{O}^{-2}$	MgO	Magnesium oxide
$\text{Li}^{+1} + \text{Br}^{-1}$	LiBr	Lithium bromide

Activity five: fill in the table below

Name of the positive ion	Formula of the positive ion	Name of the negative ion	Formula of the negative ion	Formula of the compound
Magnesium ion	Mg^{+2}	Chloride ion	Cl^{-1}	MgCl_2
Potassium ion	K^{+1}	Bromide ion	Br^{-1}	KBr
Calcium ion	Ca^{+2}	Oxide ion	O^{-2}	CaO
Lithium ion	Li^{+1}	Fluoride ion	F^{-1}	LiF

