Subject: **Science**

Level: **Form 3 Chemistry**

Topic: **Electronic Configuration**

Key Points:

- The **electron configuration** is the distribution of **electrons** of an atom or molecule in atomic or molecular orbitals.
- Electrons orbit the nucleus in structures called shells.
- A maximum number of electrons are housed in each shell.

SHELL NUMBER	MAXIMUM NUMBER OF ELECTRONS
1	2
2	8
3	18

- When an atom **donates** electron, it becomes a **positive** ion called a **CATION**

  $X - e^- \longrightarrow X^+$

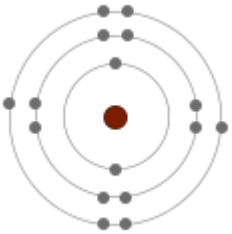
- When an atom **accepts** the electron, it becomes a **negative** ion called **ANION**

  $Y + e^- \longrightarrow Y^-$

- An **ionic bond** essentially is formed when an atom donates electrons to another atom
- The other atom will accept the electrons in an attempt for stability and compounds are formed. $X^+ + Y^- \longrightarrow XY$

Activity 1

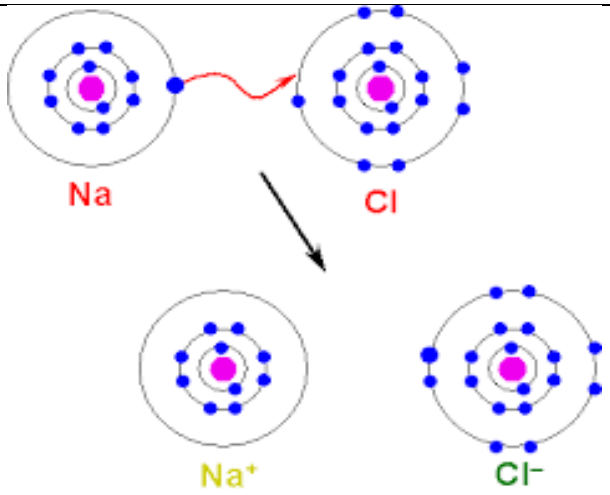
In the space below, draw the electron configuration for the element shown. The first one has been done for you.

Element	Electron Configuration
Sulfur – S_{16}	 2.8.6
Hydrogen – H_1	
Sodium – Na_{11}	
Nitrogen – N_7	
Helium – He_2	
Oxygen – O_8	

Element	Electron Configuration
Chlorine – Cl_{17}	
Beryllium – Be_4	
Fluorine – F_9	
Aluminium – Al_{13}	
Neon – N_{10}	

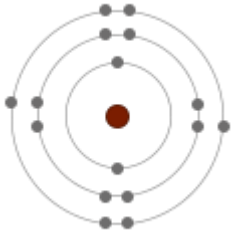
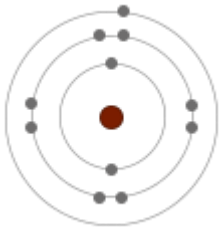
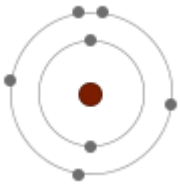
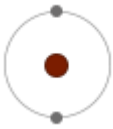
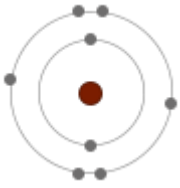
Activity 2 –

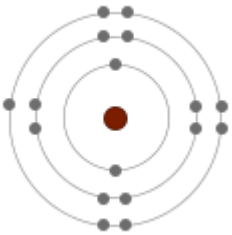
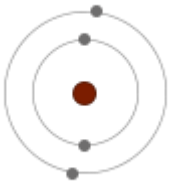
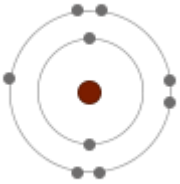
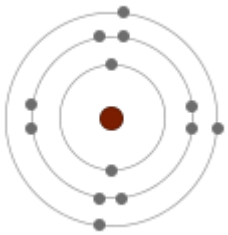
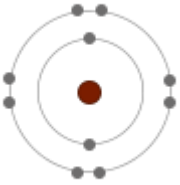
Use the table below to draw diagrams showing ionic bonding. The first one has been done for you.

Sodium + Chlorine → sodium chloride Na + Cl → Na Cl	
Li + F → LiF	
Ca + O → CaO	
Mg + O → MgO	
Be + F_2 → BeF_2	

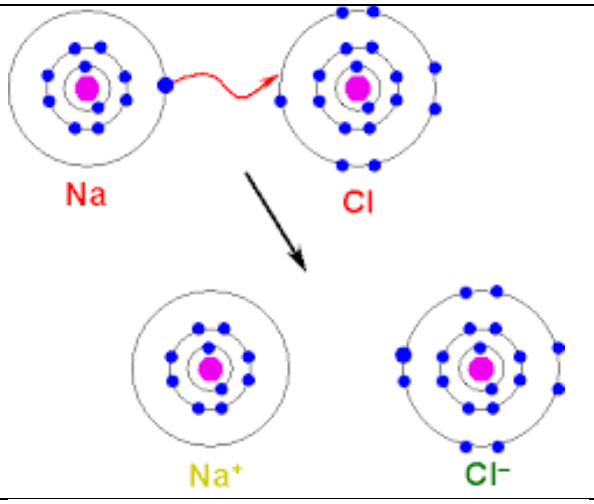
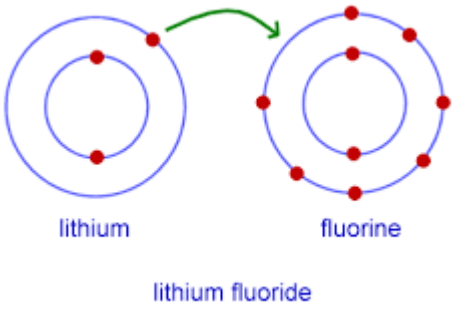
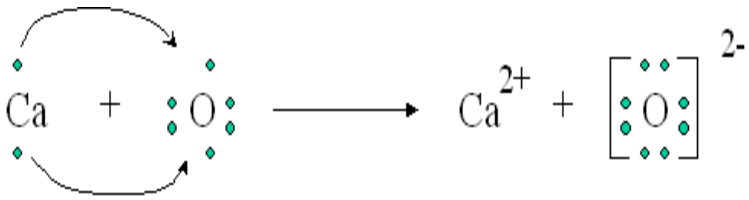
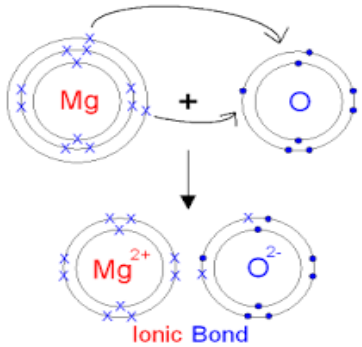
Answer Key

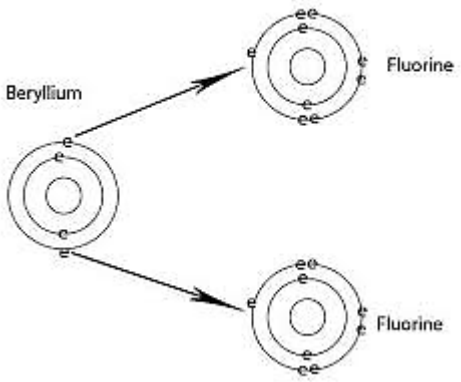
Activity 1

Element	Electron Configuration
Sulfur – S_{16}	 2.8.6
Hydrogen – H_1	
Sodium – Na_{11}	
Nitrogen – N_7	
Helium – He_2	
Oxygen – O_8	

Element	Electron Configuration
Chlorine – Cl_{17}	
Beryllium – Be_4	
Fluorine – F_9	
Aluminium – Al_{13}	
Neon – N_{10}	

Activity 2

Sodium + Chlorine ⟶ sodium chloride Na + Cl ⟶ Na Cl	
Li + F ⟶ LiF	
Ca + O ⟶ CaO Showing outer shell only ⟶	
Mg + O ⟶ MgO	

$Be + F_2 \longrightarrow BeF_2$	

References

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