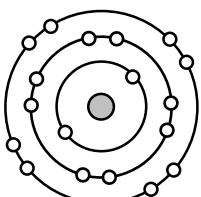
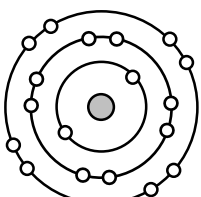
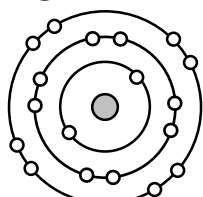
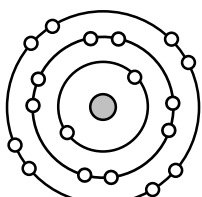
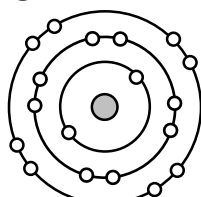
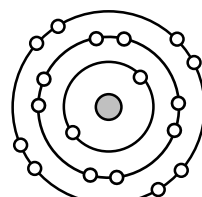
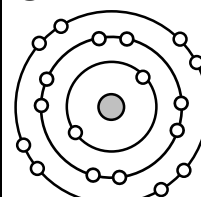
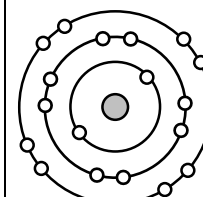
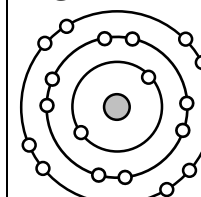
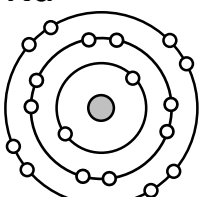
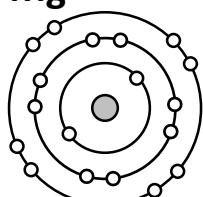
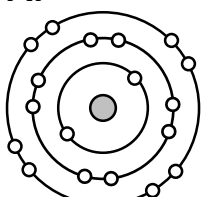
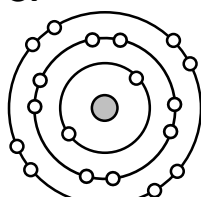
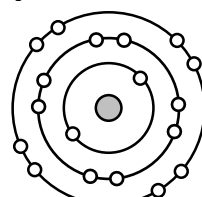
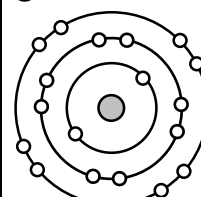
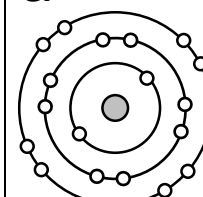
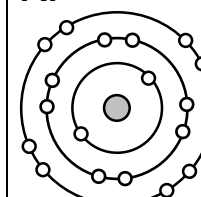
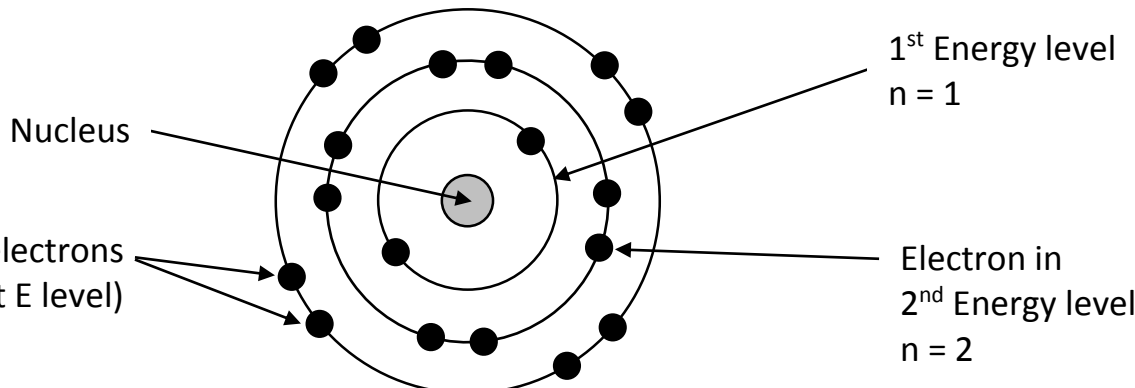


Representing Electrons Using Bohr's Planetary Model of the Atom

Grp 1		Grps 2-18							Grp 18
H	Grp 2	3-12	Grp 13	Grp 14	Grp 15	Grp 16	Grp 17	He	
 <p># total e⁻ _____</p> <p># E levels _____</p> <p># valence e⁻ _____</p>	 <p># total e⁻ _____</p> <p># E levels _____</p> <p># valence e⁻ _____</p>	 <p># total e⁻ _____</p> <p># E levels _____</p> <p># valence e⁻ _____</p>	 <p># total e⁻ _____</p> <p># E levels _____</p> <p># valence e⁻ _____</p>	 <p># total e⁻ _____</p> <p># E levels _____</p> <p># valence e⁻ _____</p>	 <p># total e⁻ _____</p> <p># E levels _____</p> <p># valence e⁻ _____</p>	 <p># total e⁻ _____</p> <p># E levels _____</p> <p># valence e⁻ _____</p>	 <p># total e⁻ _____</p> <p># E levels _____</p> <p># valence e⁻ _____</p>	 <p># total e⁻ _____</p> <p># E levels _____</p> <p># valence e⁻ _____</p>	
 <p># total e⁻ _____</p> <p># E levels _____</p> <p># valence e⁻ _____</p>	 <p># total e⁻ _____</p> <p># E levels _____</p> <p># valence e⁻ _____</p>	 <p># total e⁻ _____</p> <p># E levels _____</p> <p># valence e⁻ _____</p>	 <p># total e⁻ _____</p> <p># E levels _____</p> <p># valence e⁻ _____</p>	 <p># total e⁻ _____</p> <p># E levels _____</p> <p># valence e⁻ _____</p>	 <p># total e⁻ _____</p> <p># E levels _____</p> <p># valence e⁻ _____</p>	 <p># total e⁻ _____</p> <p># E levels _____</p> <p># valence e⁻ _____</p>	 <p># total e⁻ _____</p> <p># E levels _____</p> <p># valence e⁻ _____</p>		



Trends: Ion Charge in the Main Block Element Reference Sheet

- Noble Gases** (group 18) are the most **stable** elements, most have **8 valence** electrons (hence **octet** rule), except for Helium, which has 2 valence electrons.
 - Ne: $1s^2 2s^2 2p^6$ = 8 valence electrons
 - Ar: $1s^2 2s^2 2p^6 3s^2 3p^6$ = 8 valence electrons
 - Kr: $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6$ = 8 valence electrons

All noble gases have a **group configuration** of: $ns^2 np^6$
(*n* represents any energy level)

Refer to pg. 142, 146-147, & table 4 on pg. 160 for more information on **group configuration**

- Octet Rule** (pg. 182-183): all elements in the s and p block (groups 1-2; 13-18) will gain, lose, or share electrons to achieve 8 valence electrons to become stable like a noble gas.
 - When an atom loses electrons, the atom becomes a positive ion called a **CATION**. (pg. 159-160)

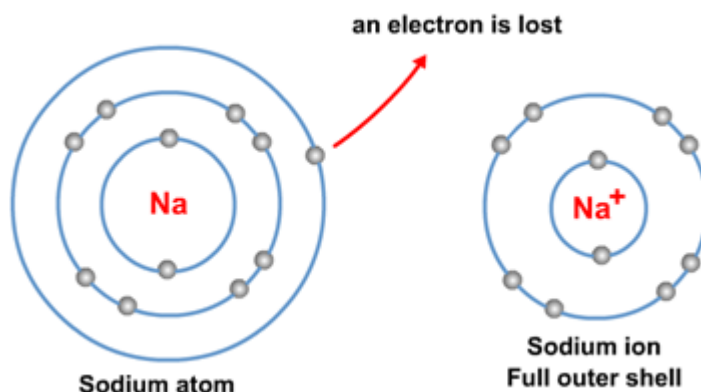
Neutral Na Atom

p⁺ = 11

e⁻ = 11

E levels = 3

valence e⁻ = 1



Positive Na⁺ Cation

p⁺ = 11

e⁻ = 10

E levels = 2

valence e⁻ = 8

Na⁺ has less E levels than Na ∴ Na⁺ (cation) is smaller in size than Na (neutral atom)

- When an atom gains electrons, the atom becomes a negative ion called an **ANION**. (pg. 159-160)

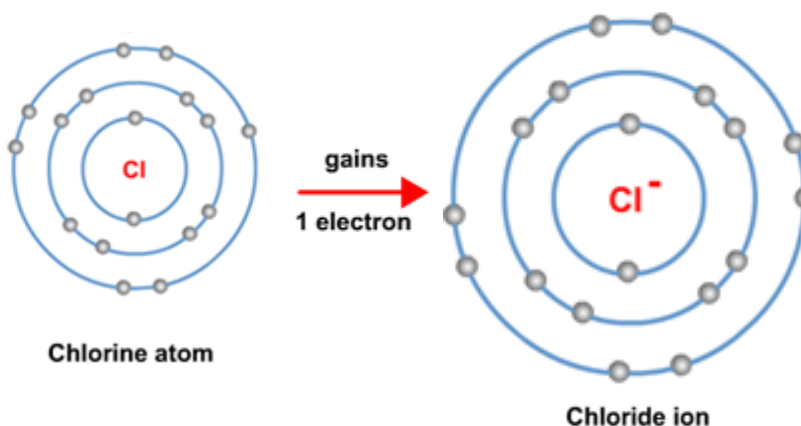
Neutral Cl Atom

p⁺ = 17

e⁻ = 17

E levels = 3

valence e⁻ = 7



Negative Cl⁻ Anion

p⁺ = 17

e⁻ = 18

E levels = 3

valence e⁻ = 8

Lower p⁺: e⁻ ratio = less effective nuclear charge = weaker attraction between nucleus and valence electrons
∴ Cl⁻ (anion) is bigger in size than Cl (neutral atom)

- Electron Dot Diagram** (pg. 184 table 10): shows valence electrons an atom has in dot form, also known as Lewis dot diagrams

