

Electron Dot Formulas

1. Identify number of valence electrons

IA		IIA		IIIA	IVA	VA	VIA	VIIA	VIIIA
H •		He •		B •	• C •	• N •	• O •	• F •	Ne •
Li •		Be •		Al •	• Si •	• P •	• S •	• Cl •	Ar •
Na •		Mg •		Ga •	• Ge •	• As •	• Se •	• Br •	Kr •
K •		Ca •		In •	• Sn •	• Sb •	• Te •	• I •	Xe •
Rb •		Sr •		Tl •	• Pb •	• Bi •	• Po •	• At •	Rn •
Cs •		Ba •							
Fr •		Ra •							

Number of valence electrons equals group number of representative elements

2. Obey the octet rule

Atoms gain, lose, or share electrons to fill their valence shells with eight electrons and achieve stability

Ionic bonds are formed by electron transfer

Nonmetals gain electrons to form anions

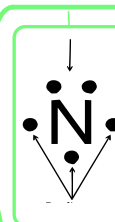
1+	2+	3+	3-	2-	1-	
H 1.0079	He 4.0026					
Li 6.941	Be 9.0122	B 10.811	C 12.011	N 14.007	O 15.999	F 18.998
Na 22.990	Mg 24.305	Al 26.982	Si 28.086	P 30.974	S 32.06	Cl 35.45
K 39.098	Ca 40.078	Ga 69.723	Ge 72.64	As 74.922	Se 78.96	Br 79.904
Rb 85.468	Sr 87.62	In 114.82	Sn 117.71	Sb 121.76	Te 127.6	I 126.905
Cs 132.91	Ba 137.33	Tl 204.38	Pb 207.2	Bi 208.98	Po 209	At 210
Fr 223.02	Ra 226.03					

Charge and electron dots reflect number of electrons lost or gained to form ions

Metals lose electrons to form cations

Covalent bonds are formed by electron sharing

Nonbonding electrons



Bonding electrons

Two shared electrons = single bond

Four shared electrons = double bond

Six shared electrons = triple bond