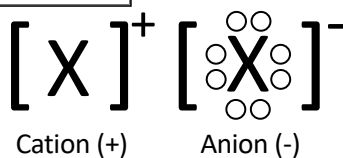


Ionization and Lewis Dot Structures

1 val e ⁻	2 val e ⁻	3 val e ⁻	4 val e ⁻
$\overset{\cdot\cdot}{\underset{\cdot\cdot}{\text{X}}}$	$\overset{\cdot\cdot}{\underset{\cdot\cdot}{\text{X}}}^{\circ}$	$\overset{\cdot\cdot}{\underset{\cdot\cdot}{\text{X}}}^{\circ}$	$\overset{\cdot\cdot}{\underset{\cdot\cdot}{\text{X}}}^{\circ}$
5 val e ⁻	6 val e ⁻	7 val e ⁻	8 val e ⁻
$\overset{\cdot\cdot}{\underset{\cdot\cdot}{\text{X}}}^{\circ}$	$\overset{\cdot\cdot}{\underset{\cdot\cdot}{\text{X}}}^{\circ}$	$\overset{\cdot\cdot}{\underset{\cdot\cdot}{\text{X}}}^{\circ}$	$\overset{\cdot\cdot}{\underset{\cdot\cdot}{\text{X}}}^{\circ}$

Neutral Atom Lewis Dot
Structures *based on valence e⁻*



Group Number	Lose/Gain	Group Number	Lose/Gain
1A / 1	Lose 1e ⁻	5A / 15	Gain 3e ⁻
2A / 2	Lose 2e ⁻	6A / 16	Gain 2e ⁻
3A / 13	Lose 3e ⁻	7A / 17	Gain 1e ⁻
4A / 14	Lose 4e ⁻	8A / 18	No Ions

2

Ion Charges

Ions Formed based on Periodic Group

Group	Val e ⁻	Charge	Group	Val e ⁻	Charge	Group	Val e ⁻	Charge
1A (1)	1	1+	3A (13)	3	3+	6A (16)	6	2-
2A (2)	2	2+	4A (14)	4	4+ / 4-	7A (17)	7	1-
1B – 10B (3 – 12)	2 (Varies)	Varies	5A (15)	5	3-	8A (18)	8	No Charge

Roman Numerals

1	2	3	4	5	6	7	8
I	II	III	IV	V	VI	VII	VIII

3

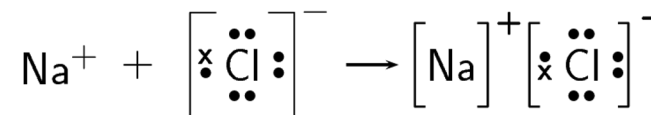
Lewis Dot Structures

1A/1	2A/2	3A/13	4A/14	5A/15	6A/16	7A/17	8A/18
1 val e ⁻	2 val e ⁻	3 val e ⁻	4 val e ⁻	5 val e ⁻	6 val e ⁻	7 val e ⁻	8 val e ⁻
$\dot{\text{X}}$	$\dot{\text{X}}^{\cdot}$	$\dot{\text{X}}^{\cdot}$	$\cdot\dot{\text{X}}^{\cdot}$	$\cdot\dot{\text{X}}^{\cdot}$	$\cdot\dot{\text{X}}^{\cdot}$	$\cdot\dot{\text{X}}^{\cdot}$	$\cdot\dot{\text{X}}^{\cdot}$
+1	+2	+3	+4	-3	-2	-1	0
$[\text{X}]^{1+}$	$[\text{X}]^{2+}$	$[\text{X}]^{3+}$	$[\text{X}]^{4+}$	$[\cdot\dot{\text{X}}:]^{3-}$	$[\cdot\dot{\text{X}}:]^{2-}$	$[\cdot\dot{\text{X}}:]^{1-}$	$[\cdot\dot{\text{X}}:]$

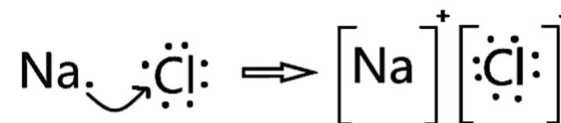
4

Ionic Bond w/ Lewis Dot Structures

Metal (1 – 3 valence e⁻) transfer electrons to Non-Metal (5 – 7 valence e⁻)



Sodium (Na) transfers an electron to chlorine (Cl) – Na¹⁺ and Cl¹⁻ – NaCl



5