



Chemical Bonding Introduction

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Video Workbook with Dr. B

To understand chemical bonding we try to visualize the arrangement of electrons and atoms.

For bonding **it's all about the valence electrons!**

We need to understand how the behavior of valence electrons relates to the visible chemical and physical properties of substances.

Valence Electrons

1 H Hydrogen 1.01	2							8 He Helium 4.00
3 Li Lithium 6.94	4 Be Beryllium 9.01							
11 Na Sodium 22.99	12 Mg Magnesium 24.31							
19 K Potassium 39.10	20 Ca Calcium 40.08							
37 Rb Rubidium 85.47	38 Sr Strontium 87.62							
		5 B Boron 10.81	6 C Carbon 12.01	7 N Nitrogen 14.01	8 O Oxygen 16.00	9 F Fluorine 19.00	10 Ne Neon 20.18	
		13 Al Aluminum 26.98	14 Si Silicon 28.09	15 P Phosphorus 30.97	16 S Sulfur 32.07	17 Cl Chlorine 35.45	18 Ar Argon 39.95	
		31 Ga Gallium 69.72	32 Ge Germanium 72.63	33 As Arsenic 74.92	34 Se Selenium 78.96	35 Br Bromine 79.90	36 Kr Krypton 83.80	
		49 In Indium 114.82	50 Sn Tin 118.71	51 Sb Antimony 121.76	52 Te Tellurium 127.60	53 I Iodine 126.90	54 Xe Xenon 131.29	



[Finding Number of Valence Electrons](#)

Key Terms

A **valence electron** is an electron in the highest energy level or an atom.

A **chemical bond** forms when valence electrons are transferred (ionic) or shared (molecular) between atoms.

Bonds are formed to fill atoms' highest energy level (often called an **Octet**). Noble gases have octets.

Ionic Bond—a strong bond between a metal cation (positive ions) and non-metal anion (negative ions)

Ion—atoms that have a charge (+ or -).

Lost electron = + charge = cation.

Gained electron = - charge = anion.

Molecular (Covalent) Bond—a semi-strong bond between two non-metals.

If your time is extremely limited, watch these videos and do the practice problems:

Counting Valence Electrons: <https://youtu.be/VBp7mKdcrDk>

Lewis Structures Made Simple: <https://youtu.be/1ZlnzyHahvo>

More Lewis Structures Practice: <https://youtu.be/DQclmBeIKTc>

The Octet Rule: <https://youtu.be/6Ecr7m-0E0E>

Exceptions to the Octet Rule: <https://youtu.be/Dkj-SMBLQzM>

Calculating Formal Charge: https://youtu.be/vOFAPlq4y_k

Practice Calculating Formal Charge: <https://youtu.be/-9f4H0puVzc>

Lewis Structures for Ionic Compounds: <https://youtu.be/2urppjeSfgA>

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