

What is a covalent bond?	A bond formed when two atoms merge their orbitals to “share” electrons, in order to satisfy both of their octet needs. Their merged orbitals become one molecular orbital inhabited by the shared electrons. Single, double, and triple covalent bonds can form between any two atoms.		
When a covalent bond forms, what type of energy change takes place?	Before a bond, atoms are far apart. There are no forces between them, and their potential energy is 0. As the attractive force pulls them together, energy is released, because the bond satisfies the octet needs of the atoms, thus making them more stable. A balance is eventually found between the attractive and repulsive forces of the atoms where they have the lowest possible potential energy.		
What is bond energy?	The energy required to break a bond. The shorter the bond, the higher the bond energy. The highest bond energies are in compounds that usually include H and F.		
What is a covalent bond like, a stick, or a spring? Why?	A covalent bond is like a spring. The two nuclei move back and forth, oscillating as the repulsive and attractive forces act upon them.		
How does electronegativity affect bond character?	Based on the difference between the electronegativity values of the different atoms in a bond, electrons are shared more or less equally.		
	0-0.5	Non-polar covalent	Electrons are shared equally
	0.5-2.1	Polar covalent	Electrons are closer to more electronegative atoms
	2.1-3.3	Ionic	One atom loses electrons and the other gains
What is a metallic bond?	Basically, a bunch of metal atoms stuck together because of an attraction between them. This bond does not satisfy their octet needs.		
What is a dipole?	A polar molecule, one that is asymmetrical in the sense that it has ends with opposite partial charges because it is made of molecules with a large electronegativity difference.		
How is polarity related to bond strength?	The greater the electronegativity difference, the higher the bond energy and the stronger the bond.		
What is a Lewis structure, and how is one drawn?	A pictorial representation of an atom in which electrons are represented by dots and covalent bonds by dashes.		

	<p>To draw a Lewis structure:</p> <ol style="list-style-type: none"> 1. Identify the number of electrons in the molecule <ul style="list-style-type: none"> o Remember to add/subtract the appropriate number of electrons if it is a charged polyatomic ion 2. Draw the atoms and position in a way that is consistent with the typical bond number of those atoms <ul style="list-style-type: none"> o Remember that these rules can be broken 3. Give each atom its exact number of valence electrons 4. Give all of the atoms an octet 5. When there seems to be a lack of electrons, make multiple bonds 6. Put brackets around the Lewis structure of a polyatomic ion and indicate its charge
What is a coordinate covalent bond?	A covalent bond in which one atom contributes both of the electrons.
What is a lone pair?	An unshared pair of electrons.
What does saturated mean?	There is the highest possible amount of hydrogen.
What are sigma bonds?	Single bonds.
What are pi bonds?	The additional bonds in double and triple bonds. These electrons are not on the same plane as the sigma electrons.
What does the suffix -ane mean?	There are only single bonds. This is a saturated molecule, because all of the places that need more electrons are satisfied by hydrogens.
What does the suffix -ene mean?	There are, as much as possible, double bonds. As compared to saturated molecules, for every 2H lost, 1 double bond is gained. Double bonds are usually not (especially in bigger molecules) next to one another because they repel one another.
What does the suffix -yne mean?	There are, as possible, triple bonds.
What is a cyclone?	A round molecule. It could be a straight chain; with the removal of a single covalent bond one end can be bonded to the other to form a circle.
What is a resonance structure?	When there exist molecules with both multiple and single bonds between the same elements, there may be more than one way to position the pi electrons. In that case, all of the possible Lewis structures are drawn, with double headed arrows drawn to indicate the possible positions of the pi bonds..
How are covalent compounds named?	The less electronegative element is listed first with a prefix to indicate number, then the more electronegative element with a prefix to indicate number and the suffix "ide".

What is VSEPR theory?

Valence shell electron pair repulsion theory. Using this model the shape of a molecule can be predicted by examining the Lewis structure.

1. Make the Lewis structure
2. Count the bonds around the central atom
3. Count the lone pairs around the central atoms
4. Write a formula in ABE form:
 - A is the central atom
 - B is the number of bonded atoms (not the number of bonds)
 - E is the number of lone pairs around the central atom

Name	ABE
Linear	AB ₂
Bent	AB ₂ E
Triangular planar	AB ₃
Tetrahedral	AB ₄
Triangular pyramidal	AB ₃ E
Bent	AB ₂ E ₂
Triangular bipyramidal	AB ₅
Octahedral	AB ₆