**Step 1: Find the total number of valence electrons.**  
  
In this step, add up the [total number of valence electrons](http://chemistry.about.com/od/chemistryglossary/g/Valence-Electrons-Definition.htm) from all the atoms in the molecule.  
  
[**Step 2**](http://chemistry.about.com/od/molecularformulaweights/a/How-To-Find-Molecular-Mass.htm)**: Find** [**the number of electrons**](http://chemistry.about.com/od/atomicstructure/fl/How-Many-Protons-Neutrons-and-Electrons-Are-There-in-an-Atom.htm) **needed to make the atoms "happy".**  
  
An atom is considered "happy" if the atom's [outer electron shell](http://chemistry.about.com/od/chemistryglossary/g/Electron-Shell-Definition.htm) is filled.  
Elements up to period four [on the periodic table](http://chemistry.about.com/od/periodictables/ig/Periodic-Tables/Periodic-Table-of-the-Elements.-0EQ.htm) need eight electrons to fill their outer electron shell. This property is often known as the "[octet rule](http://chemistry.about.com/od/chemistryglossary/a/octetruledef.htm)".

**Step 3: Determine** [**the number of bonds**](http://chemistry.about.com/od/chemistryglossary/g/Single-Bond-Definition.htm) **in the molecule.**  
  
[Covalent bonds](http://chemistry.about.com/od/chemistryglossary/a/covalentbonddef.htm) are formed when one electron from each atom forms [an electron pair](http://chemistry.about.com/od/chemistryglossary/a/electronpairdef.htm). Step 2 tells how many electrons are needed and Step 1 is how many electrons you have. Subtracting the number in Step 1 from the number in Step 2 gives you the number of electrons needed to complete the octets.

Each bond formed requires [two electrons](http://chemistry.about.com/od/chemistryglossary/a/electrondef.htm), so the number of bonds is half the number of electrons needed, or (Step 2 - Step 1)/2.  
  
**Step 4: Choose a central atom.**  
  
The [central atom](http://chemistry.about.com/od/atomicstructure/f/What-Is-An-Atom.htm) of a molecule is usually the least [electronegative](http://chemistry.about.com/od/periodicproperties/a/electronegativity.htm) atom or the atom with the highest valence. Hydrogen and [halogen atoms](http://chemistry.about.com/od/chemistryglossary/g/Halogenation-Definition.htm) tend to appear on the outside of the molecule and are rarely the central atom. If Carbon is present it is the central atom.  
  
**Step 5: Draw a** [**skeletal structure**](http://chemistry.about.com/od/S_Chemistry_Terms/fl/Skeletal-Structure-Definition.htm)**. Use HONC1234 rule.**  
  
Connect the atoms to the central atom with a straight line representing a bond between the two atoms. The central atom can have up to four other atoms connected to it.

**Step 6: Place electrons around outside atoms.**  
  
Complete the octets around each of the outer atoms. If there are not [enough electrons](http://chemistry.about.com/od/electronicstructure/a/Octet-Rule.htm) to complete the octets, the skeletal structure from step 5 is incorrect. Try a different arrangement.  
  
**Step 7: Place remaining electrons around the central atom.**  
  
Complete the [octet for the](http://chemistry.about.com/od/workedchemistryproblems/a/How-To-Draw-A-Lewis-Structure-Octet-Exception.htm) central atom with the remaining electrons. If there are any bonds left over from Step 3, create [double bonds](http://chemistry.about.com/od/chemistryglossary/g/Double-Bond-Definition.htm) with [lone pairs](http://chemistry.about.com/od/chemistryglossary/g/Lone-Pair-Definition.htm) on outside atoms. If there are more than eight electrons on the central atom and the atom is not one of the [exceptions to the octet rule](http://chemistry.about.com/od/chemicalbonding/tp/Exceptions-To-The-Octet-Rule.htm), the number of valence atoms in Step 1 may have been counted incorrectly.  
This will complete the [Lewis dot](http://chemistry.about.com/od/generalchemistry/a/lewisstructures.htm) structure for the molecule.

\*\*Remember that some atoms do not follow the octet rule. Boron, a metalloid in Group IIIA, can form molecules where they are surrounded by only six valence electrons. Be forms 4e-, S, P, and Xe form expanded octet – 12e-. Some non-metals can have more than eight valence electrons when bonding to the highly electronegative halogens. Finally, metals lose electrons to form ions when bonding with non-metals and will never have unshared electron pairs.\*\*