

**Rule 1:** Every atom should get 8 electrons in any chemical compound. This is known as octet rule. *The Exceptions:* The following elements do not obey the octet rule and their octet values are as follows: H=2, He=2, Li=4, Be=4, B=6

**Rule 2:** Some compounds form double and triple bonds. That extra pair of electrons is be shared between the central atom and side atom to form double bond. In triple bonds, all six electrons are shared between the two atoms.

## Method 1: Math (using NH<sub>3</sub> as an example)

**Step 1:** Find all valence electrons in the atoms and add them together. N = 5 H = 1 x 3 atoms = 3 **Total = 8 valence electrons**

**Step 2:** Find out what an octet is for each atom, and add them together. N = 8 H = 2 x 3 atoms = 6. **Total = 14 shared electrons**

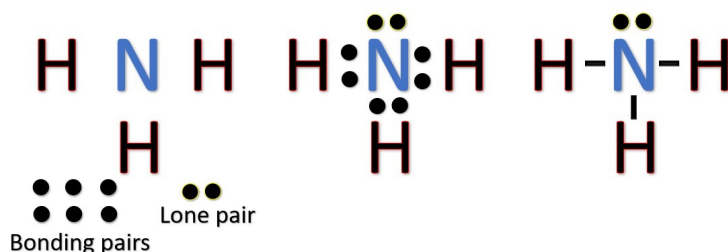
**Step 3:** Subtract valence electrons from shared electrons. This will give you the number of bonding electrons. 14 shared electrons - 8 valence electrons = **6 bonding electrons**

**Step 4:** Divide the number of bonding electrons by 2 get the number of bond pairs. 6 bonding electrons / 2 = **3 bonding pairs**

**Step 5:** Subtract the number of bonding electrons from the number of valence electrons. This give you the number of non-bonding lone pairs. (8 valence - 6 bonding electrons) / 2 = **1 lone pair**

**Step 6:** Use information from step 4 and 5 to draw the Lewis structure.

Put atom with lowest electronegativity (nitrogen here) in the center. Arrange the remaining atoms around it. Finally put the bond pairs and lone pairs of electrons on the atoms.



## Method 2: Puzzle Pieces

**Step 1:** Find out how many valence electrons each atom in the molecule has. Each N brings 5 electrons; Each H brings 1 electron.

**Step 2:** Put atom with lowest electronegativity in the center. Move around the pieces until each atom has its desired octet. Remember, H only needs 2 electrons.

