

Lewis Structures

1. Calculate valence electrons

Determine the number of valence electrons in the molecule by adding the valence electrons for each atom minus the charge.

Atom A	
Atom B	+
Charge	-
Sum	

2. Draw a skeletal structure

Determine the central atom. Usually this is the *most electronegative element* or the atom that can form the greatest number of bonds. It is *usually not* hydrogen or a halogen.

Place this atom at the centre and connect all other atoms using single bonds.

3. Add lone pair electrons

Add lone pair electrons to the terminal atoms (not the central one) until they have a full octet *or* there are no more electrons left to distribute - count electrons from Step 1. If there are electrons left over, allocate them to the central

Follow the octet rule - aim for 8 electrons for each element. Remember that bonds contain 2 electrons.

4. Calculate formal charges

Calculate the formal charge for each individual atom in the Lewis structure.

$$\text{Formal charge} = \text{Number of valence electrons} - \text{Number of bonds} - \text{Number of lone pair electrons}$$

Aiming for a formal charge of 0, or as close to 0 as possible.

The background of the page is decorated with various chemistry-related illustrations in a soft, pastel style. These include several test tubes, some containing liquids, a pair of safety goggles, a Bunsen burner, a flask with a stopper, and a simplified atomic model with a central nucleus and orbiting electrons. The central text is contained within four stacked, rounded rectangular boxes with a light beige grid pattern and a reddish-brown border.

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