

Follow these 5 steps

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Follow These 5 Steps To draw a Lewis dot structure for a molecule or ion, follow these steps: -Step 1: Count up the number of valence electrons for each atom, and total them up to give the total number of electrons for the molecule. If the molecule is an ion, include that charge in the count. For example, for a +1 ion, subtract one electron, and for a -2 ion add two electrons to the total count. (For more information about how to count the number of valence electrons per atom, see the related questions link to the left of this answer). -Step 2: Determine which atom is the central atom and join all the atoms using only single bonds. Sometimes which atom is the central atom is hard to determine. For instance with a molecule like CH₄ it's clear the C is the central atom, but for something more complicated like ClO₂F₃ it's not as clear (it's the Cl in this case). -Step 3: Add lone pairs to each atom as necessary so that each atom has an octet (except H which can only have 2 electrons total) when you count all the atom's lone pairs and two electrons for each of its bonds. For example the carbon atom (C) in CH₄ has four single bonds to its four hydrogen (H) atoms, each with two electrons, so that makes eight electrons - you wouldn't need to add any lone pairs to this one. Count up the total number of electrons as it is now drawn (2 electrons per bond). -Step 4: If the total you got in Step 1 is the same as in Step 3, you're done! If it doesn't you'll need to make some changes. If the number of electrons in Step 3 is larger than in Step 1, you must add double bonds as necessary between atoms. Then adjust the number of lone pairs again so that each atom has an octet. Remember no double bonds to H or with any of the halogens! If the total electron count with only single bonds is smaller than in Step 1, you probably made a mistake somewhere. Go back and

double check. -Step 5: Continue adjusting the arrangement of single and double bonds and lone pairs (and also triple bonds if necessary) until the total electron count matches what you got in Step 1. Some additional tips: - Do not ever exceed octets on atoms before sodium (Na) in the third row. - Draw resonance structures that maximize bonding and minimize formal charge (see related questions about resonance forms and also assigning formal charges). -Place formal charges on appropriate atoms, and in general more electronegative atoms should have the negative charges. (Again, see links for how to assign formal charges). -For additional help, try reading the books " Chemistry for Everyone" or " Chemistry for Dummies"