Steps for Drawing Lewis Dot Diagrams

1. **Draw a skeletal structure** and connect neighboring atoms with single bonds.
   a. Hydrogen atoms are always terminal—never in the middle.
   b. Place the least electronegative atom in the middle (unless inconsistent with c.)
   c. The structure with the smallest (closest to zero) formal charges is preferred.

2. **Sum the valence electrons** for all atoms and adjust for charges (less for +, more for −).

3. Count each single bond as two electrons then place the remaining electrons by pairs (to outside atoms first) to **form octets on all atoms** (a duet—single bond only—on each H).

4. a. If there are **not enough electrons** to form octets on all atoms, move pairs of electrons into bonds to **form double and triple bonds** to complete octets.
   b. If there are **more than enough electrons** to form octets on all atoms, **place extra electrons on the central atom** as lone pairs.
   c. If there are **an odd number of electrons**, the least electronegative atom may have less than an octet.

5. Without eliminating octets **optimize formal charges** when possible by moving electron pairs.
   a. Charges equal to (or closest to) zero are preferred. (0 is better than +1, +1 is better than +2.)
   b. Atoms with higher electronegativity should not have more positive formal charges than atoms with lower electronegativity. (e.g., O should not have formal charge 0 or +1 if N has −1.)

6. Add **resonance structures** that have equivalent bonding patterns for the same skeletal structure (i.e., draw atoms in exactly identical patterns—only the electrons change places.) Draw double arrows (↔) between equivalent structures.

7. Draw **brackets** [ ] around structures for ions, and put the charge as a superscript outside the brackets.