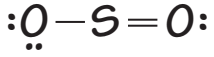
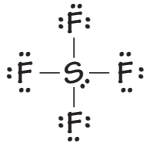
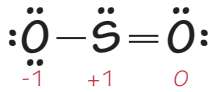
The Basic Lewis Structure Streamlined Algorithm

Here is a nicely streamlined algorithm for constructing a Lewis diagram. We'll use SO_2 as our example.

1 *Count the total number of valence electrons* in all the atoms in the chemical formula.	SO_2 S: $6 \times 1 = 6$ O: $6 \times 2 = 12$ total: **18 valence electrons**
2 *Distribute the terminal atoms around the central atom.*	O S O
3 *Multiply the number of Hydrogen Atoms by 2 and the number of all other atoms by 8.* *Add those numbers.*	S: $8 \times 1 = 8$ O: $8 \times 2 = 16$ total: **24 needed electrons**
4 *Subtract the valence electrons from the needed electrons & divide this difference by 2.* This is the number of covalent bonds you need	$\frac{1}{2}(24 - 18) = 3$ **We need 3 bonds**
5 *Connect the central atom to the peripheral atoms with the required number of bonds.* *Then fill out each atom's octet with lone pairs.*	
6 *If you have valence electrons left over, add them as lone pairs to the central atom.* ▷ This allows for oddities like SF_4	

Advanced Steps (if you know about formal charges

7 *Check the formal charge* of each atom.	 -1 +1 0
8 *Extend the octet of the central atom*, if appropriate, to minimize the total formal charge.