Lewis Structure How-To Sheet

1) **COUNT the valence electrons**

2) **PLACE the atoms**
   - **least electronegative element at the center** *(except H, always on the outside)*
   - **Put the remaining atoms around the central atom** *(symmetrically if possible)*
   - **Look for hints in how the formula is written** *(HOOH)*

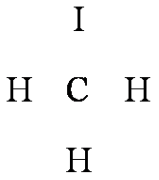
3) **SINGLE BOND all atoms together** *(nothing floats around by itself!)*

4) **FULL SHELL to all atoms**
   - **Most things want 8 valence electrons** *(octet rule)*
   - **Careful with exceptions to the octet rule!**
   - **Add lone pairs to the outer atoms**
   - **Add lone pairs to the center atom**

5) **COUNT AND FIX if needed – may not need fixing!**
   - **Make sure you used the correct number of valence electrons** *(from step #1)*
   - **Used too many electrons? Fix it with double and triple bonds!**
     i. **Find two atoms next to each other that can make multiple bonds**
     ii. **Take a pair away from each of these atoms**
     iii. **Put a new pair in-between them to make the new bond**
     iv. **Repeat if needed until fixed** *(try to keep symmetry in mind!)*

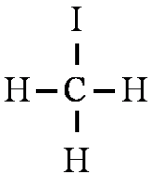
1) CH_3I 4 + 1 + 1 +1 + 7 = 14 v.e

2)



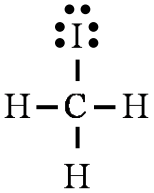
0 e⁻ used

3)



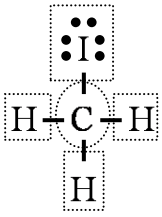
8 e⁻ used, 6 e⁻ left

4)



14 e⁻ used, 0 e⁻ left

5)



each atom has full shell

# of Bonds Certain Atoms Like to Make		Exceptions to the Octet Rule		BOND	SYMBOL	# OF SHARED e⁻	
H (*always*)	1	**ATOM**	**# e⁻**	single	X — X	2	Usually the only atoms you will see making multiple bonds will be: C, N, O, S
F, Cl, Br (*if not the central atom*)	1	H	2	double	X = X	4	
C, Si	4	B	6	triple	X ≡ X	6	
O (*if not the central atom*)	1 or 2	P	10				
		S	12				