

CONCEPT: LEWIS DOT STRUCTURES: NEUTRAL COMPOUNDS

- Many possible Lewis Dot Structures exist, but there are rules to draw the best structure.
 - Recall, elements form bonds in order to _____ electrons and become like the nearest noble gas.

EXAMPLE: Draw the Lewis Dot Structure for formaldehyde molecule, CH_2O .

STEP 1: Determine the total number of valence electrons of the structure.

- Recall, Valence Electrons = _____ of the element.

STEP 2: Place the _____ electronegative element in the center and connect all elements with single bonds.

- **Exception:** _____ never goes in the center.
- **Halogens:** Only make _____ bonds as a surrounding element.

STEP 3: Add electrons to all the _____ elements until they have 8 electrons (Octet Rule).

- **Exception:** Hydrogen only wants _____ electrons around it.

STEP 4: Place any remaining electrons on the central atom.

STEP 5: If any elements don't have 8 octet electrons, add _____ and _____ bonds between them.

STEP 6: The Formal Charge can be used to determine if a Lewis Dot Structure is drawn correctly.

- The only allowable formal charges for an element = _____, _____, or _____.
 - For stability, draw the structure that gives _____ formal charges .
 - _____ formal charge on the more electronegative element tends to be more stable.

PRACTICE: Determine the Lewis Dot Structure for the disulfur dichloride molecule, S_2Cl_2 .

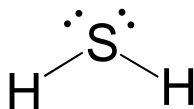
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Lone Pairs

- Recall, nonbonding electrons are not involved in the bonds between elements.

□ **Lone Pair:** A pair of _____ electrons.

EXAMPLE: How many lone pairs does the sulfur atom possess in the hydrogen sulfide molecule?



- a) 1 b) 4 c) 2 d) 0 e) 3

PRACTICE: How many lone pairs are on the central element for the following compound: AsH₃.

PRACTICE: How many total bonding electrons are on the central element for the following compound: CO₂.

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PRACTICE: How many lone pairs are on the central element for the following compound: NOCl

PRACTICE: Determine the Lewis Dot Structure for the silicon tetrabromide molecule, SiBr₄.

PRACTICE: Determine the Lewis Dot Structure for the diazene molecule, N₂H₂.