Lewis Dot Structures

Video Workbook with Dr. B

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Lewis Structures tell us about the arrangement of valence electrons in the molecule.

There are a set of general rules for drawing Lewis Structures.

For more difficult structures we also look at Formal Charge.

Key Videos

Drawing Lewis Structures Made Easy

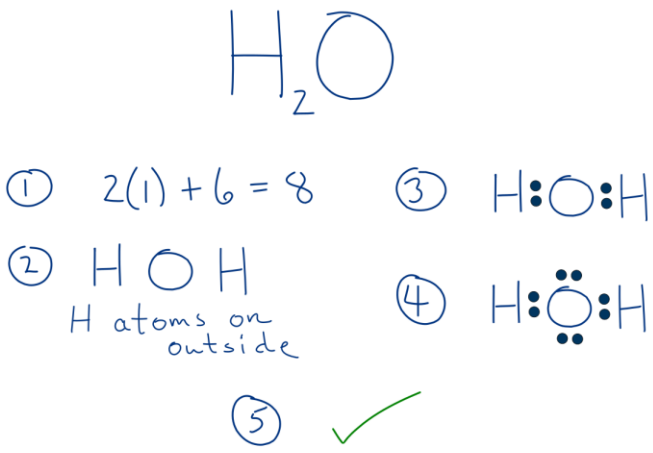
More Practice Drawing Lewis Structures

These general rules help write correct Lewis Structures:

- **Step 1**: Count the number of valence electrons for the molecule.
- **Step 2**: Write a skeleton structure of the molecule. The least electronegative element goes in the center. H always goes on the outside.
- **Step 3**: Place a pair or electrons between atoms to form bonds.
- **Step 4**: Complete the octets for atoms using the remaining valence electrons.
- **Step 5**: Check that you only used the number of valence electrons in Step 1. If not, you may need double or triple bonds.

For compounds with Sulfur (S) and Phosphorous (P) it is good to check the formal charges on each atom.

Example

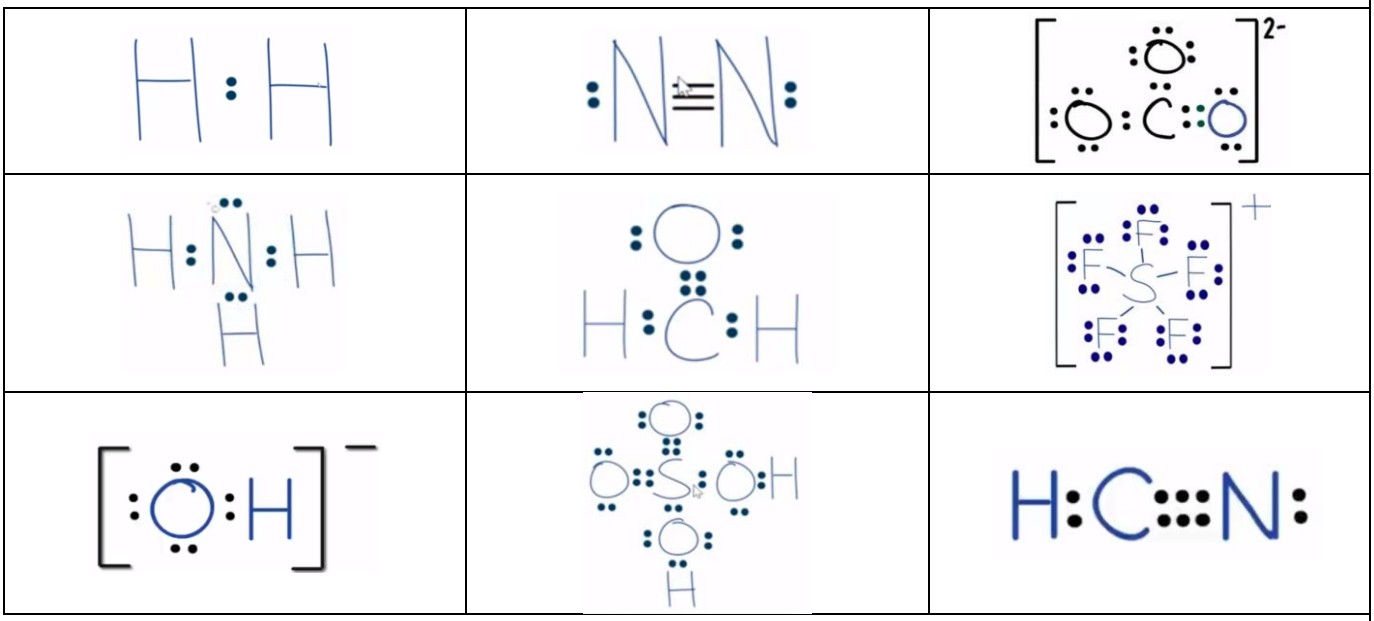


Example of Double Bonds

Practice with Video Explanations

Easy	*Medium*	*More Challenging*
H_2 https://youtu.be/1BZBlc61Lks	N_2 https://youtu.be/FGgsHfCgpLM	CO_3^{2-} https://youtu.be/S5ZwwR7BZdI
NH_3 https://youtu.be/V_dqGG6rnz4	CH_2O https://youtu.be/NyBpdjXm3OY	SF_5^+ https://youtu.be/ruv34i2-SRU
OH^- https://youtu.be/p--XSqmXZiI	H_2SO_4 https://youtu.be/HSmnlkmq13w	HCN https://youtu.be/Ap93tYTN8C4

Answers



More Practice

1. Which element only needs two valence electrons to fill its highest energy level?
   Explanation: https://youtu.be/SqnfcwKMmYE

2. How can you tell how many valence electrons there are for NH_3?
   Explanation: https://youtu.be/EPYQ2uxP_sY

3. Covalent (also called Molecular) compounds share electrons to obtain octets. Draw the Lewis Structure for H_2O to show this.
   Explanation: https://youtu.be/UfiltW_xkrA

4. Is it possible for an atom to have more than eight valence electrons?
   Explanation: https://youtu.be/Dkj-SMBLQzM

5. Sodium (Na) has one valence electron. Chlorine (Cl) has seven valence electrons. Describe how they would bond to obtain octets.
   Explanation: https://youtu.be/nQyOaEtboC8

If your time is extremely limited, watch these videos and do the practice problems:

Counting Valence Electrons: https://youtu.be/VBp7mKdcrDk
Lewis Structures Made Simple: https://youtu.be/1ZlnzyHahvo
More Lewis Structures Practice: https://youtu.be/DQclmBeIKTc
The Octet Rule: https://youtu.be/6Ecr7m-0E0E
Exceptions to the Octet Rule: https://youtu.be/Dkj-SMBLQzM
Calculating Formal Charge: https://youtu.be/vOFAPlq4y_k
Practice Calculating Formal Charge: https://youtu.be/-9f4H0puVzc
Lewis Structures for Ionic Compounds: https://youtu.be/2urppjeSfgA

Report errors and suggestions to DrB@breslyn.org

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