

AP Chemistry Daily Videos

2.5 Lewis Diagrams

Video #1

1. What are the different ways to represent molecules?
2. Summarize what Lewis Diagrams are trying to communicate. Make sure you include what dashes and dots represent.
3. How do valence electrons and Lewis structures relate to groups/families?
Complete the Lewis Diagram for the examples provided in the video

1										18
H	2									He
Li	Be									Ne
Na	Mg	Transition Metals								Ar
K	Ca	Transition Metals								Kr
		Transition Metals								
		Transition Metals								

4. Why can carbon form four chemical bonds but nitrogen only three?
5. Using diatomic molecules as examples, how do you represent double and triple bonds?

6. Pause the video at 8:22 and attempt the problem, then evaluate how you did and identify any errors.

Based on the patterns we have seen so far, what is the Lewis diagram for carbon tetrafluoride, CF_4 ?

7. What is the octet rule?

Video #2

1. What are the steps in creating Lewis Structures?

- 1.

- 2.

- 3.

- 4.

2. If the Lewis structure is an ion, what must be included in the structure?

3. Pause the video at 4:24, 5:04, & 5:38 and attempt the problems, evaluate how you did and identify any errors.

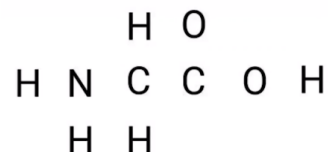
Carbon dioxide – CO_2 Cyanide ion – CN^{1-} Sulfur tetrachloride – SCl_4

4. What is an expanded octet and give an example? Why do these only occur for element in row three and more?

Video #3

1. Pause the video at 0:41 and attempt the problem, then evaluate how you did and identify any error.

Glycine is the simplest amino acid found in proteins. The molecular formula of glycine is $C_2H_5O_2N$. In the box below, complete the Lewis diagram for glycine.



2. Pause the video at 3:00 and attempt the problem, then evaluate how you did and identify any error.

Nitrous acid, HNO_2 , has two nitrogen-to-oxygen bonds. These bonds have different lengths. The hydrogen atom is bonded to one of the oxygen atoms. In the box below, draw a Lewis diagram for nitrous acid which is consistent with the given information.



3. Pause the video at 4:15 and attempt the problem, then evaluate how you did and identify any error.

Phosphorus pentachloride, PCl_5 , is a chlorinating agent that reacts violently with water. The Lewis diagram of PCl_5 is shown below left. A student claims that because nitrogen is in the same group as phosphorus, the compound nitrogen pentachloride must exist and have the Lewis diagram below right. Do you agree or disagree with the student's claim? Justify your answer in terms of Lewis diagrams principles and atomic structure

