

Connect the Dots

Lewis Dot Symbols

Name _____

Date _____ Period _____

Purpose

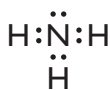
To investigate the role of electrons in covalent bonding.

Materials

- Lewis dot puzzle pieces web application

Instructions

The puzzle pieces are called Lewis dot symbols. You can use them to pair up electrons to construct models of molecules.



Lewis dot structure
for NH_3

Part I: Create Molecules

1. Use the puzzle pieces to construct these molecules. Then draw the Lewis dot structure for each molecule, leaving off the outline of each puzzle piece.



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2. Use the puzzle pieces to create more molecules here. Draw the Lewis dot structure of each molecule and write the molecular formula below it.
 - a. Use one S atom and as many H atoms as you need.
 - b. Use one Si atom and as many F atoms as you need.
 - c. Use two O atoms and as many H atoms as you need.

3. Use the puzzle pieces to construct a molecule with the molecular formula C_2H_6 . Draw its Lewis dot structure and its structural formula below.

4. Use the puzzle pieces to construct all possible isomers of C_3H_8O . Draw Lewis dot structures below. Do the molecules follow the HONC 1234 rule?
5. Use the puzzle pieces to design your own molecule with at least five carbon atoms. Draw its Lewis dot structure. What is the molecular formula of your designer molecule? Does it obey the HONC 1234 rule?

Part 2: Valence Electrons

Find one puzzle piece of each type of atom. Sort these puzzle pieces according to the periodic table.

1. Record your puzzle piece sort by copying it into the table. Hydrogen and helium have already been done. Include the symbol for the element and the dots.

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| H· | He: | | | | |
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2. List two patterns that you notice in your table.
3. **Making Sense** Using what you've learned, explain why the HONC 1234 rule works.
4. **If You Finish Early** Draw the Lewis dot structures for two different molecules with the molecular formula C_2H_7N .