

5-3C Using Models to Represent Organic Compounds

Organic molecules are made of carbon, hydrogen, and sometimes other atoms. These molecules can be relatively simple like methane (CH₄) or more complex like caffeine (C₈H₁₀N₄O₂). In this activity, you will investigate the type of structure of organic molecules.

Materials

- Organic model kit
- Note the standard colour coding of the atoms
 - Carbon= black, with four holes
 - Hydrogen= white, with only one hole
 - Oxygen= red, with two holes
 - Chlorine= green, with only one hole

Procedure

Part 1

Using the kit, build models of each organic molecule. Once you have built the model of the organic molecule, draw the structural formula. For these organic molecules there is only one way to assemble the atoms.

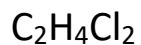
Name and molecular formula	Drawing of the molecule
Methane CH ₄	
Ethane C ₂ H ₆	

Ethene C_2H_4	
Ethyne (commonly known as acetylene) C_2H_2	
Propane C_3H_8	
Methanol CH_4O	
Chloroethane C_2H_5Cl	

Part 2

Using the kit, build models of each organic molecule. Once you have built the model of the organic molecule, draw the structural formula. For these organic molecules there are two ways to assemble the atoms.

Name and molecular formula	Drawing of both of the molecules
C ₃ H ₆	
C ₄ H ₁₀	
C ₃ H ₇ Cl	
C ₂ H ₆ O	



Questions:

1. How many covalent bonds do each of these elements make when they form organic molecules?

a. Carbon: _____

b. Oxygen: _____

c. Hydrogen: _____

d. Chlorine: _____

2. What types of bonds (single, double, or triple) are these elements able to form?

a. Carbon: _____

b. Oxygen: _____

c. Hydrogen: _____

d. Chlorine: _____

3. What general patterns did you notice creating organic molecules?
