## Building Organic Molecules

Name:
Block: Date:

## Introduction

Structures of organic molecules, whether 2D or 3D, can be intimidating. However, understanding the shape of organic molecules is incredibly important. A slight change in one bond or the placement of an atom can drastically change the properties of the molecule.

The molecule below is of heptene. Use the structure to answer the questions below:


1-heptene
a) How many carbon atoms are there in the molecule?

b) How many hydrogen atoms are there in the molecule? $\qquad$
c) What is the formula for the molecule?

d) The lines between the carbon atoms as well as between carbon and hydrogen atoms represent bonds. How many bonds can each carbon have?
e) How many bonds can hydrogen have? $\qquad$

## Part I: Single Bonded Hydrocarbons

At your station, you will find a variety of atoms and springs (bonds). You will assemble them in a variety of ways and answer the following questions.

Use the black atoms to represent C , the white atoms to represent H and the springs to represent bonds.

1. Construct a model of methane, $\mathrm{CH}_{4}$.

How many bonds were used to construct this molecule? $\qquad$
2. Construct a model of pentane, with 5 carbons in a row.

3. Using the model from the previous step, move one of the carbons from the end and attach it to the second carbon out of the 4 in a row.

How many hydrogens were used to construct this molecule?


How many bonds were used to construct this molecule?

$$
16
$$

Part II: Double Bonded Straight Hydrocarbons

1. Construct a model of propene by bonding three carbons in a row. Between the first two carbons , put two bonds (double bond). Fill in the rest of the molecule with hydrogen. Do not deconstruct this model.

How many hydrogens were used to construct this molecule?
 What is the formula for propene? ${ }_{3}$
2. Construct another model of propene by putting the double bond between the second and third carbon. Compare the model of propene from \#1 to the one that was just constructed.

Is this model from \#1 and from \#2 the same or different? Explain your answer with a diagram: $-C_{1}^{C}=C_{1}-C_{1} \quad-C-C_{1}=C_{1}$
They're the same! (Mirror images)

