

Name: \_\_\_\_\_

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Chemistry 11  
Organic Chemistry  
Lesson #1 AN INTRODUCTION TO ORGANIC CHEMISTRY

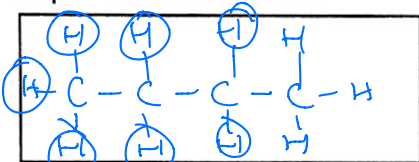
Organic chemistry is the study of hydrocarbon molecules and are therefore made up of both Carbon and hydrogen atoms.



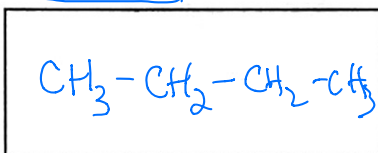
Carbon is a unique element because it has a combining capacity of four. As a result carbon is capable of forming single, double or triple bonds.

ALKANES are hydrocarbons that contains a carbon backbone with only (C<sub>N</sub>H<sub>2N+2</sub>) single bonds. Butane C<sub>4</sub>H<sub>10</sub>

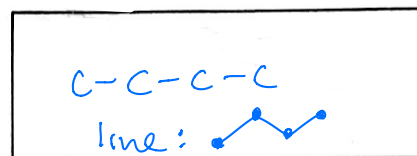
Expanded Structure



Condensed structure

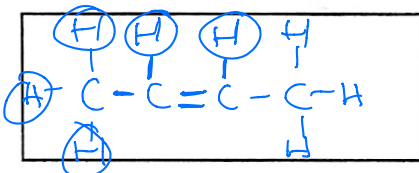


Skeletal Structure

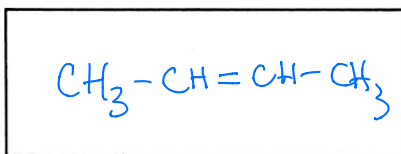


ALKENES are hydrocarbons that contains a carbon backbone with at least one double bond (C<sub>N</sub>H<sub>2N</sub>) 2-Butene C<sub>4</sub>H<sub>8</sub>

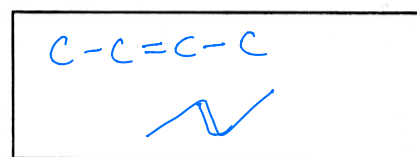
Expanded Structure



Condensed Structure

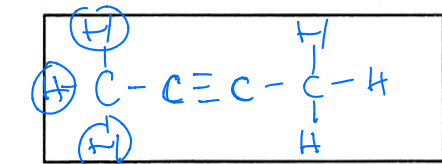


Skeletal Structure

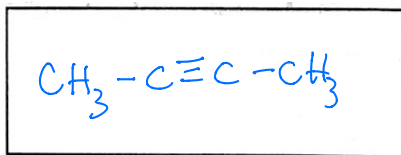


ALKYNES are hydrocarbons that contains a carbon backbone with at least one TRIPLE bond. (C<sub>N</sub>H<sub>2N-2</sub>) 2-Butyne C<sub>4</sub>H<sub>6</sub>

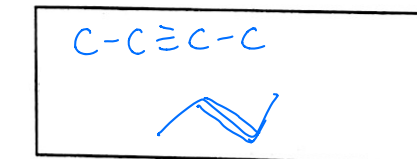
Expanded Structure



Condensed structure



Skeletal Structure



When learning about organic chemistry we begin with the ALKANE (C<sub>N</sub>H<sub>2N+2</sub>) because they comprise the basic structure of all organic molecules.

Naming is an important concept in organic chem as it differs greatly from what we have learned so far in chemistry Since Science 8 until now we have studied INORGANIC CHEMISTRY !

Fill in the following table with the appropriate **expanded structures**

NAME	# of C	FORMULA
<u>METHANE</u>	1	$\begin{array}{c} \text{H} \\   \\ \text{H} - \text{C} - \text{H} \\   \\ \text{H} \end{array}$
<u>ETHANE</u>	2	$\begin{array}{c} \text{H} \quad \text{H} \\   \quad   \\ \text{H} - \text{C} - \text{C} - \text{H} \\   \quad   \\ \text{H} \quad \text{H} \end{array}$
<u>PROPANE</u>	3	$\begin{array}{c} \text{H} \quad \text{H} \quad \text{H} \\   \quad   \quad   \\ \text{H} - \text{C} - \text{C} - \text{C} - \text{H} \\   \quad   \quad   \\ \text{H} \quad \text{H} \quad \text{H} \end{array}$
<u>BUTANE</u>	4	$\begin{array}{c} \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \\   \quad   \quad   \quad   \\ \text{H} - \text{C} - \text{C} - \text{C} - \text{C} - \text{H} \\   \quad   \quad   \quad   \\ \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \end{array}$
<u>PENTANE</u>	5	$\begin{array}{c} \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \\   \quad   \quad   \quad   \quad   \\ \text{H} - \text{C} - \text{C} - \text{C} - \text{C} - \text{C} - \text{H} \\   \quad   \quad   \quad   \quad   \\ \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \end{array}$
<u>HEXANE</u>	6	$\begin{array}{c} \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \\   \quad   \quad   \quad   \quad   \quad   \\ \text{H} - \text{C} - \text{C} - \text{C} - \text{C} - \text{C} - \text{C} - \text{H} \\   \quad   \quad   \quad   \quad   \quad   \\ \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \end{array}$
<u>HEPTANE</u>	7	$\begin{array}{c} \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \\   \quad   \quad   \quad   \quad   \quad   \quad   \\ \text{H} - \text{C} - \text{C} - \text{C} - \text{C} - \text{C} - \text{C} - \text{C} - \text{H} \\   \quad   \quad   \quad   \quad   \quad   \quad   \\ \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \end{array}$
<u>OCTANE</u>	8	$\begin{array}{c} \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \\   \quad   \quad   \quad   \quad   \quad   \quad   \quad   \\ \text{H} - \text{C} - \text{C} - \text{C} - \text{C} - \text{C} - \text{C} - \text{C} - \text{C} - \text{H} \\   \quad   \quad   \quad   \quad   \quad   \quad   \quad   \\ \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \end{array}$
<u>NONANE</u>	9	$\begin{array}{c} \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \\   \quad   \quad   \quad   \quad   \quad   \quad   \quad   \quad   \\ \text{H} - \text{C} - \text{C} - \text{C} - \text{C} - \text{C} - \text{C} - \text{C} - \text{C} - \text{C} - \text{H} \\   \quad   \quad   \quad   \quad   \quad   \quad   \quad   \quad   \\ \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \end{array}$
<u>DECANE</u>	10	$\begin{array}{c} \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \\   \quad   \quad   \quad   \quad   \quad   \quad   \quad   \quad   \quad   \\ \text{H} - \text{C} - \text{C} - \text{C} - \text{C} - \text{C} - \text{C} - \text{C} - \text{C} - \text{C} - \text{C} - \text{H} \\   \quad   \quad   \quad   \quad   \quad   \quad   \quad   \quad   \quad   \\ \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \end{array}$

Fill in the following table with the appropriate **condensed structures**

NAME	# of C	FORMULA
METHANE	1	CH <sub>4</sub>
ETHANE	2	CH <sub>3</sub> -CH <sub>3</sub>
PROPANE	3	CH <sub>3</sub> -CH <sub>2</sub> -CH <sub>3</sub>
BUTANE	4	CH <sub>3</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>3</sub>
PENTANE	5	CH <sub>3</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>3</sub>
HEXANE	6	CH <sub>3</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>3</sub>
HEPTANE	7	CH <sub>3</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>3</sub>
OCTANE	8	CH <sub>3</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>3</sub>
NONANE	9	CH <sub>3</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>3</sub>
DECANE	10	CH <sub>3</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>3</sub>

Fill in the following table with the appropriate **skeletal structures**

NAME	# of C	FORMULA
METHANE	1	C
ETHANE	2	C-C
PROPANE	3	C-C-C
BUTANE	4	C-C-C-C
PENTANE	5	C-C-C-C-C
HEXANE	6	C-C-C-C-C-C
HEPTANE	7	C-C-C-C-C-C-C
OCTANE	8	C-C-C-C-C-C-C-C
NONANE	9	C-C-C-C-C-C-C-C-C
DECANE	10	C-C-C-C-C-C-C-C-C-C

### HOMEWORK:

Read in Chemistry 11 pgs 504-511 then complete Section 11.1 Questions 1-8  
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