

Worksheet 5: Alkenes and Alkynes

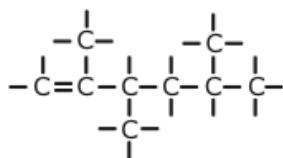
1. Draw a structural formula for each name given.

| | |
|--------------|-------------|
| a) 1-pentene | d) 2-octene |
| b) 2-pentene | e) 4-octyne |
| c) 3-hexyne | f) 2-butene |

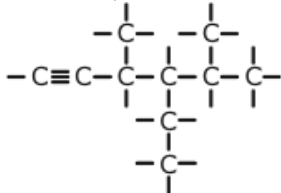
2. Write a IUPAC name for each alkene or alkyne.

a) $\text{CH}_3\text{CH}_2\text{CHCHCH}_3$ b) $\text{CH}_3\text{CCCH}_2\text{CH}_2\text{CH}_2\text{CH}_3$ c) $\text{CH}_3\text{CCCH}_2\text{CH}(\text{CH}_3)\text{CH}_2\text{CH}_3$

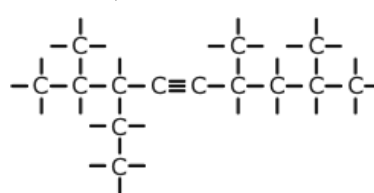
d)



e)



f)

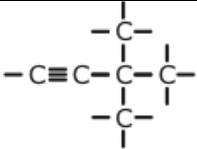
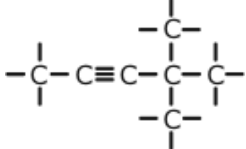
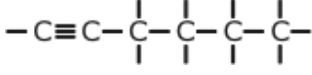


3. For the molecular formula C_5H_{10} draw and name all of the possible non-cyclic structural isomers.

4. For each compound, provide:

- the IUPAC name or the structural formula
- the molecular formula
- the class of hydrocarbon (alkane, alkene, or alkyne)
- draw the structural formula and name one structural isomer

| | |
|--------------------------|--------------------|
| a) a) 4-methyl-1-pentyne | b) dimethylpropane |
| c) | d) |

| | |
|--|---|
| e) 2,2-dimethylbutane | f) 3-ethyl-2,4-dimethyl-2-pentene |
| g) 3,3-dimethyl-1-pentyne | h)  |
| i)  | j)  |

5 Draw a complete structural formula for each hydrocarbon.

| | |
|---------------------------------|------------------------------|
| (a) 1-butyne | (c) 3,3-dimethyl-1-butyne |
| (b) 2,2-dimethyl-3-ethylpentane | (d) 2,3,5-trimethyl-1-octene |

6. For each hydrocarbon, write the molecular formula and draw a structural diagram.

(a) propyne (b) cyclobutane (c) 2-butene

7. Classify each hydrocarbon as saturated or unsaturated

(a) hexane (b) cyclobutane (c) 1-butyne (d) propene

8. Draw and name three alkyne structural isomers for the formula C_5H_8 .