

Worksheets for Organic Chemistry

Answers

Worksheet 1

Alkanes

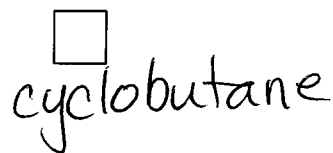
Question 1.

Provide IUPAC names for the following structures

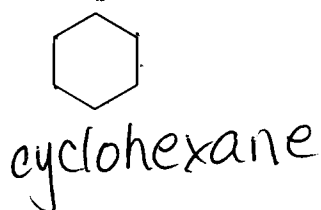
a)



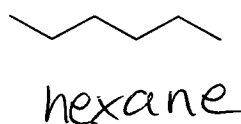
b)



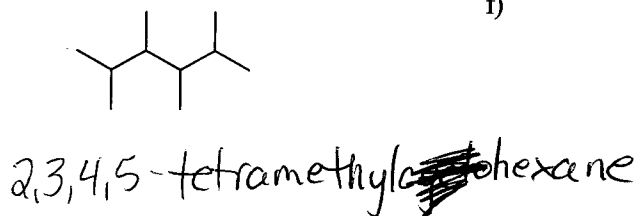
c)



d)



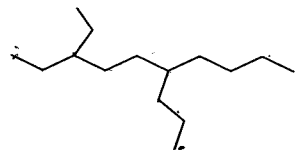
e)



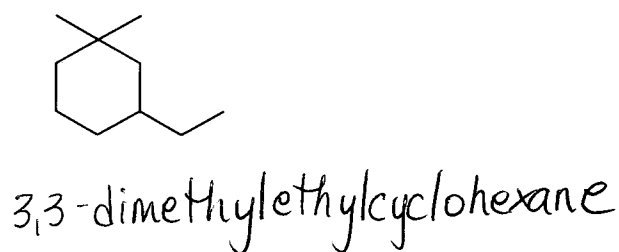
f)



g)



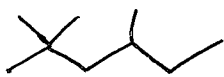
h)



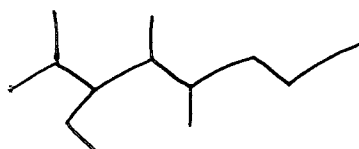
3-ethyl-6-propyldecane

Question 2. Draw the structures of the following compounds:

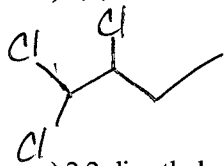
a) 2,2,4-trimethylhexane



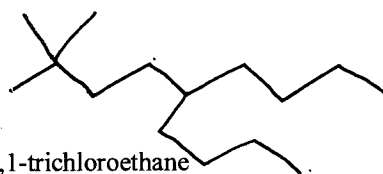
d) 3-ethyl-2,4,5-trimethyloctane



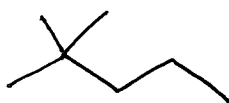
b) 1,1,2-trichlorobutane



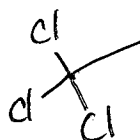
e) 5-butyl-2,2-dimethylnonane



c) 2,2-dimethylpropane



f) 1,1,1-trichloroethane



Question 3. Explain why the following molecules have an incorrect name. What is the correct name?

a) 1,3-dimethylbutane

2-methylpentane

b) 4-methylpentane

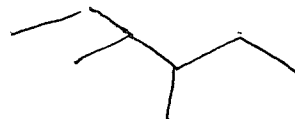
2-methylpentane

c) 2,2-diethylbutane



3-ethyl-3-methylpentane

d) 2-ethyl-3-methylpentane



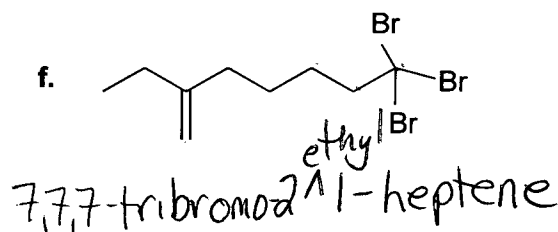
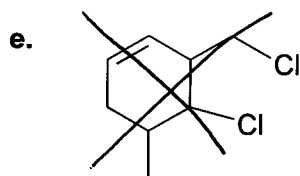
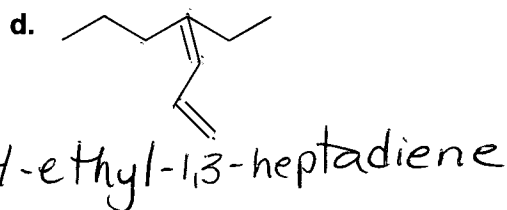
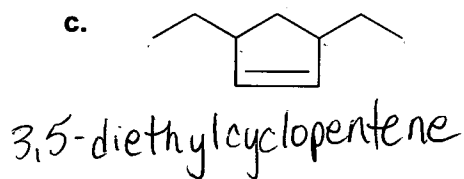
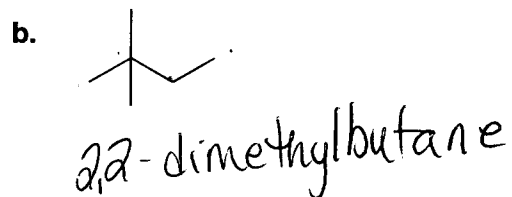
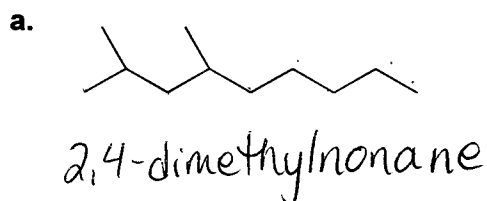
3,4-dimethylhexane

Worksheet 2

Hydrocarbons

Question 1.

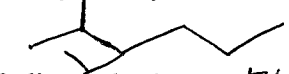
Give the systematic name for the following compounds.



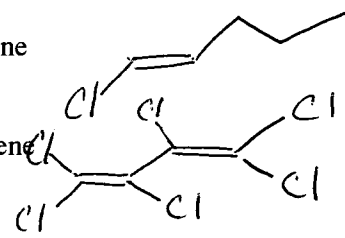
Question 2.

Draw structures corresponding to the following names. Which name is incorrect and what is its correct name.

a. 2-methyl-3-ethylhexane

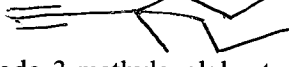


b. trans-1-chloro-1-pentene

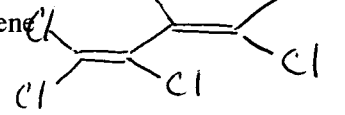


c. 3,3-dipropyl-1-butyne ~~wrong~~

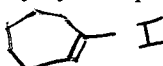
3-methyl-3-propyne



d. hexachloro-1,3-butadiene



e. 1-iodo-3-methylcycloheptene



f. ~~1,2-dicyclopentylethene~~

g. ~~2,3-dibromo-4-(methyl-ethyl)nonane~~

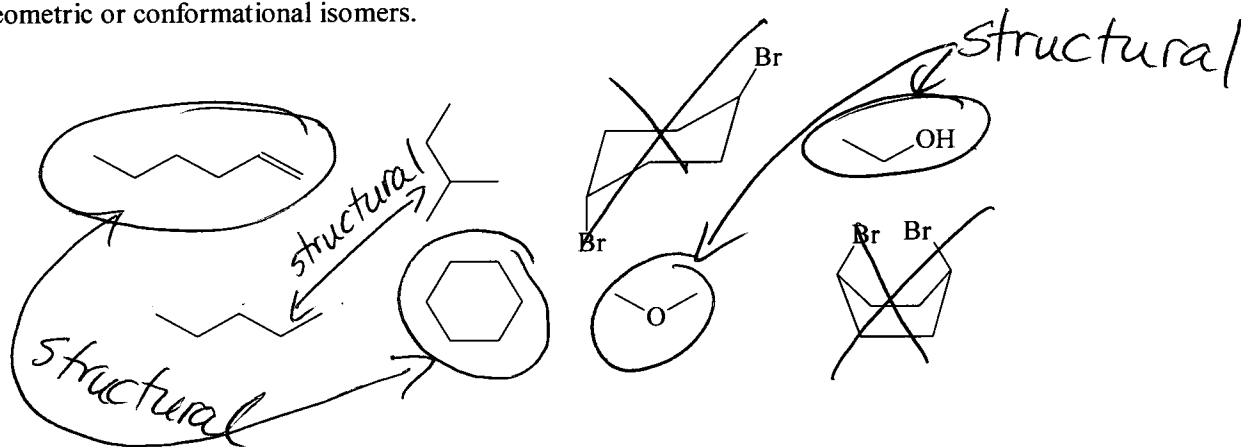
h. ~~3-(2-bromoethyl)-1-hexene~~

Worksheet 3

Isomers and Alkenes/Alkynes Worksheet

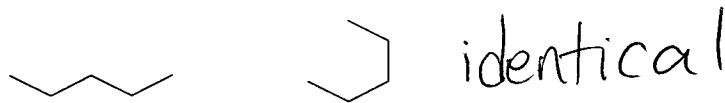
ISOMERS

Question 1. Pick out the pairs of isomers, for each pair state whether they are structural, geometric or conformational isomers.

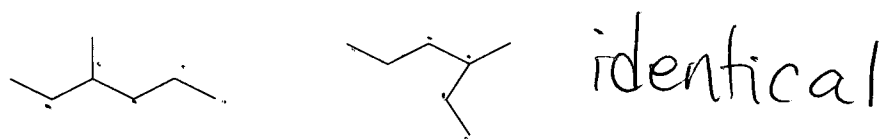


Question 2. Identify the pairs in each set as identical or as structural isomers.

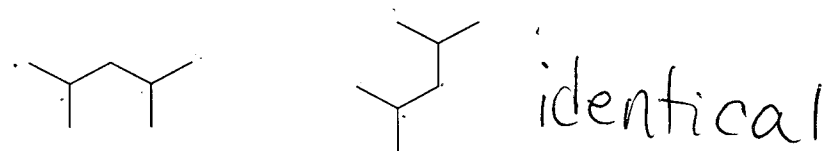
a)



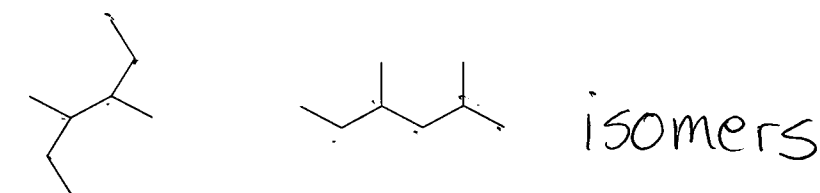
b)



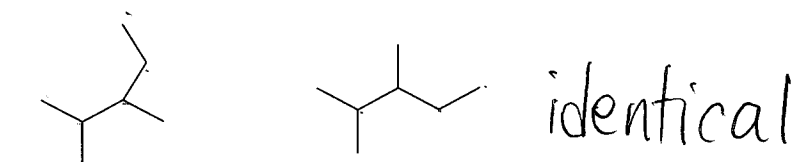
c)



d)

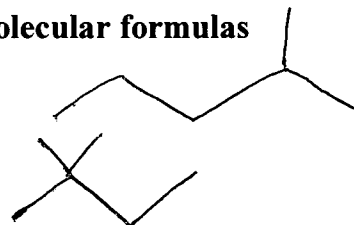
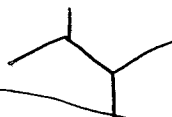
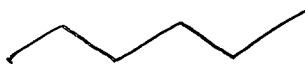


e)

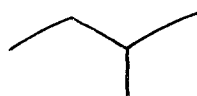
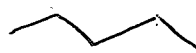


Question 3. Draw isomers for the following molecular formulas

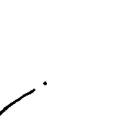
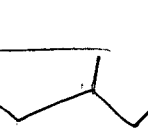
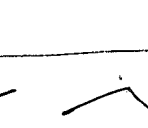
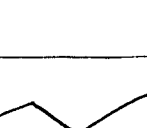
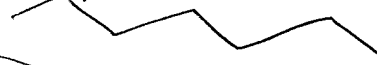
a) C_6H_{14} (5 isomers)



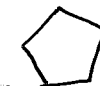
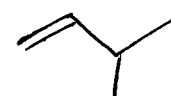
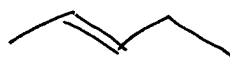
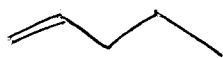
b) C_5H_{12} (3 isomers)



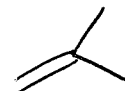
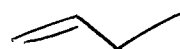
c) C_7H_{16}



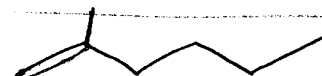
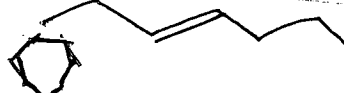
d) C_5H_{10}



e) C_4H_8



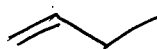
f) C_7H_{14}



lots more...

Question 4. Indicate which of the following compounds show geometric isomerism, draw the structures and specify them as cis or trans

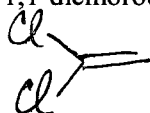
a) 1-butene



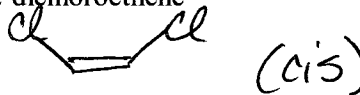
b) 2-butene



c) 1,1-dichloroethene



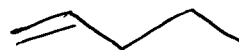
d) 1,2-dichloroethene



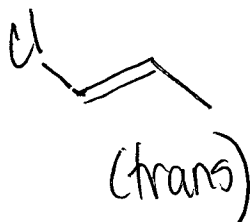
e) 2-methyl-2-butene



f) 1-pentene



g) 1-chloropropene



h) 1-chloro-2-methyl-2-butene

