Name _____ Date _____ Class _____

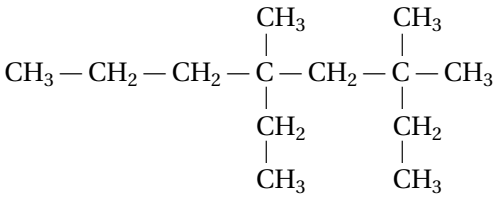
# 22 HYDROCARBON COMPOUNDS

## Practice Problems

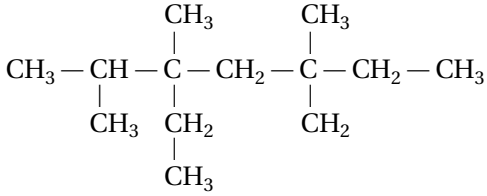
*In your notebook, solve the following problems.*

### SECTION 22.1 HYDROCARBONS

**1.** Name this hydrocarbon, according to the IUPAC system.



**2.** Name this hydrocarbon, according to the IUPAC system.



**3.** Write the structural formula for each of the following compounds.

**a.** 3-ethyl-2,3-dimethylpentane

**b.** 3,4-diethylhexane

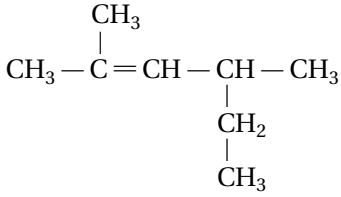
**c.** 2,3,4,5-tetramethylnonane

**4.** Draw condensed structural formulas for the straight-chain alkanes with seven and eight carbons.

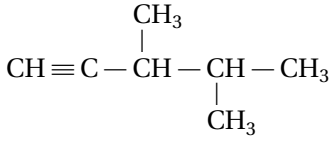
**5.** How many single bonds are in a hexane molecule?

### SECTION 22.2 UNSATURATED HYDROCARBONS

**1.** Name this compound, according to the IUPAC system.



**2.** Name this compound, according to the IUPAC system.



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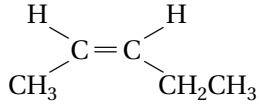
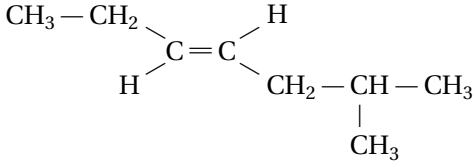
3. Name and draw all of the alkynes with the molecular formula $C_5H_8$.
4. Write structural formulas for the following hydrocarbons.
   **a.** 3,5-dimethyl-1-hexene
   **b.** 4-methyl-1-pentene
   **c.** 3,3-dimethyl-1-butyne

## SECTION 22.3 ISOMERS

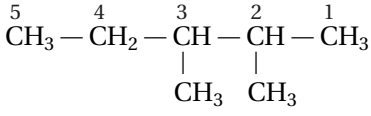
1. Name this compound, according to the IUPAC system.



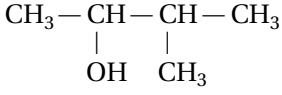
2. Name this compound, according to the IUPAC system.



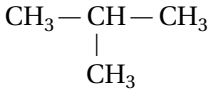
3. Write the structural formula for *trans*–2–heptene.
4. Which of the following can exist as *cis*, *trans* isomers?
   **a.** 2-butene
   **b.** 1-butene
   **c.** 2-methyl-2-butene
   **d.** 3-hexene
5. Identify the asymmetric carbon in the following compound.



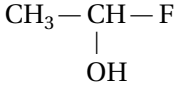
6. Which of the following compounds have an asymmetric carbon?
   **a.**



   **b.**



   **c.**



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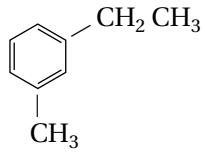
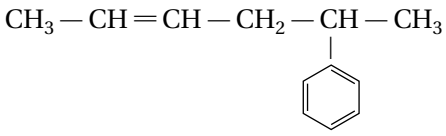
## SECTION 22.4 HYDROCARBON RINGS

**1.** Name this compound, according to the IUPAC system.




**2.** Name this compound, according to the IUPAC system.




**3.** Write structural formulas for the following compounds.

**a.** 1,3-dimethylcyclohexane

**b.** *cis*-1,2-diphenylethene

**c.** 1,4-diethylbenzene

## SECTION 22.5 HYDROCARBONS FROM EARTH'S CRUST

**1.** Write a balanced equation for the complete combustion of 2-methylheptane.

**2.** Describe three types of fuels obtained by refining petroleum.