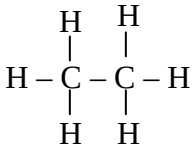
Chapter 22 Focus Questions

NOTICE: THIS REPRESENTS 5 ASSIGNMENTS – 4 FOR THE FOCUS QUESTIONS, AND 1 FOR THE BOOK PROBLEMS AT THE END.

Hint: When doing reactions and naming compounds, draw the entire structural formula, not just the abbreviated form. Example: For ethane, do



not C_2H_6
(things will make more sense this way)

Section 1

1. What is organic chemistry?
2. What are hydrocarbons?
3. What does it mean to be a saturated hydrocarbon?
4. What does it mean to be an unsaturated hydrocarbon?
5. What is an *alkane*? What is a normal, or straight-chained, or unbranched hydrocarbon?
6. What is structural isomerism? How does structural isomerism affect properties of the isomers?
7. Read the rules for naming alkanes and then work through the sample exercise 22.2 and 22.3.
8. You are already familiar with combustion reactions. What are substitution reactions of alkanes? What is distinctive about them? How could you predict the products if you combined an alkane with a halogen?
9. What is a dehydrogenation reaction? What are the conditions under which this type of reaction occurs? How could you predict the products of this reaction?
10. What is a cyclic alkane? Look at the sample exercise 22.4 for the rules of naming cyclic alkanes.

Section 2

1. What is an alkene? How is it different than an alkane? How does naming differ in alkenes than in alkanes?
2. What is *cis* and *trans* isomerism?
3. What is an alkyne? How is it different than an alkane or an alkene? How is naming different? Look over sample 22.5 and try to name the molecules.
4. What is an addition reaction? What happens? What types of molecules does it happen to? What is the result of this type of reaction? What are the reactants involved? What are the products that result?
5. What is a halogenation reaction? What are the reactants? What are the products?

Section 3

1. What is an aromatic hydrocarbon? What is special about them? How do you name them?
2. What is the symbol for benzene?

Section 4

1. What is a functional group?
2. What is an alcohol? How does it change the basic molecule? How do you modify the name? Read through sample exercise 22.6.
3. What is a carbonyl group? How is a ketone different than an aldehyde? How do you modify the base name for a ketone? How do you modify the base name for an aldehyde?
4. What are oxidation reactions for ketones and aldehydes?
5. What is a carboxyl group? How are they used in carboxylic acids? What is the general formula for them? How do you modify the base name in order to represent it? What is the common name for ethanoic acid?
6. What is an ester? What is the general formula? How do you modify the base names in order to name the ester? What is an additional product in the formation of esters?
7. What is an amine? How do you modify the base name with the addition of each amine group?

Do problems #29, 31, 51, 59, 61