

Carbon Chemistry ▪ *Guided Reading and Study***Carbon Compounds**

This section describes the properties that many carbon compounds have in common. It also describes carbon compounds that contain only the elements carbon and hydrogen.

Use Target Reading Skills

As you read, complete the outline about carbon compounds. Use the red headings for the main ideas and the blue headings for supporting ideas.

Carbon Compounds
I. Organic compounds
II. Hydrocarbons
A.
B.
III.
A.
B.
C.
IV.
A.
B.
C.
V.
VI.

Organic Compounds

1. Most compounds that contain carbon are called _____.

2. Why are many organic compounds liquid or gas at room temperature?

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Carbon Compounds *(continued)*

3. Circle the letter of each sentence that is true about organic compounds.
- a. They generally have strong odors.
 - b. They have high boiling points.
 - c. Many don't dissolve well in water.
 - d. They are good conductors of electric currents.

Hydrocarbons

4. What is a hydrocarbon?

5. Why are hydrocarbons used for fuel in stoves, cars, and airplanes?

6. This is the chemical formula for a hydrocarbon called propane: C_3H_8 .
What does this formula tell you about a molecule of propane?

Structure and Bonding in Hydrocarbons

7. What are three carbon chains that form in hydrocarbons?

- a. _____ b. _____
c. _____

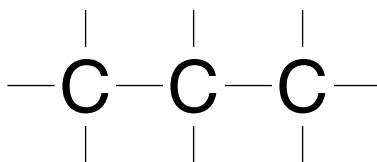
8. What does a structural formula show about a molecule of a compound?

9. Each dash in a structural formula represents a chemical

_____.

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10. The partially complete structural formula below shows the “backbone” for a propane molecule. Complete the structural formula of this hydrocarbon by showing all the hydrogen atoms that are bonded to the carbon chain.

**Propane (C₃H₈)**

11. Compounds that have the same molecular formula but different structures are called _____.
12. Is the following sentence true or false? Carbon atoms can only form a single bond between other carbon atoms. _____
13. Complete the table about saturated and unsaturated hydrocarbons.

Saturated and Unsaturated Hydrocarbons			
Type of Hydrocarbon	Bonds	Ending on Names	Example
a.	Single bonds		Ethane
b.	Double or triple bonds	-ene or -yne	

Substituted Hydrocarbons

14. A hydrocarbon in which one or more hydrogen atoms have been replaced by atoms of other elements is called a(n) _____.

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15. In compounds that contain halogens, what replaces hydrogen atoms?

16. Circle the letter of the hydroxyl group.

a. -HO

b. -COOH

c. -OH

d. -COH

17. A substituted hydrocarbon that contains one or more hydroxyl groups is called a(n) _____.

18. Circle the letter of each alcohol.

a. freon

b. ethanol

c. acetic acid

d. methanol

19. Circle the letter of the carboxyl group.

a. -HO

b. -COOH

c. -OH

d. -COH

20. A substituted hydrocarbon that contains one or more carboxyl groups is called a(n) _____.

Esters

21. An organic compound made by chemically combining an alcohol and an organic acid is called a(n) _____.

22. Is the following sentence true or false? Many esters have pleasant, fruity smells. _____

Polymers

23. What is a polymer?

24. The smaller molecules that make up polymers are called _____.

25. Circle the letter of each synthetic polymer.

a. wool

b. polyester

c. silk

d. nylon