Name: _____ **Date:** _____

Complex Carbon Creations: Challenging Chemistry for 8th Grade

Functional group identification, isomer synthesis, and polymer precursors; build high-level structural analysis skills for future advanced chemistry success.

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1. Assess the structural relationship between pentane and 2-methylbutane. Which term best characterizes these two molecules?

A. Covalent Isotopes
B. Structural Isomers
C. Homologous Catalysts
D. Functional Monomers

2. A polymer is formed through a reaction where many small units called _____ are linked together in a long chain.

A. Isotopes
B. Alkanes
C. Monomers
D. Enzymes

3. The presence of a double bond between carbon atoms classifies a hydrocarbon as 'saturated'.

A. True
B. False

4. A molecule contains the hydroxyl (-OH) functional group attached to a carbon chain. To which organic family does this molecule belong?

A. Carboxylic Acids
B. Alkanes
C. Alcohols
D. Esters

5. In a laboratory setting, a student observes a hydrocarbon that resistant to addition reactions but undergoes substitution. It features a stable, hexagonal ring of six carbons. This is likely:

A. An Aromatic Compound
B. A Straight-chain Alkane
C. A Branched-chain Alkyne
D. A Saturated Fatty Acid

6. The process of _____ involves breaking down large, complex hydrocarbons into smaller, more useful molecules like gasoline.

A. Hydrogenation
B. Combustion

Name: _____ Date: _____

C. Cracking
D. Distillation

7. Carbon is unique because its four valence electrons allow it to form stable covalent bonds with many elements, including itself.

A. True
B. False

8. An organic compound is found to have a carboxyl group (-COOH). This specific arrangement of atoms makes the molecule act as a(n):

A. Inert Gas
B. Weak Base
C. Organic Acid
D. Strong Alkali

9. When an alcohol reacts with a carboxylic acid, a fragrant compound called a(n) _____ is produced, often used in perfumes.

A. Ether
B. Ester
C. Ketone
D. Aldehyde

10. All organic compounds must contain both carbon and hydrogen to be classified as 'organic' by modern IUPAC standards.

A. True
B. False