

Name: _____ Date: _____

Answer Key: Secrets of the Carbon Skeleton: A 9th Grade Chemistry Quiz

Identify basic hydrocarbon structures and functional groups through visual patterns to build a strong foundation for future organic synthesis.

1. What unique property of carbon allows it to form long, stable chains and complex rings found in organic molecules?

Answer: B) It has four valence electrons for bonding

Carbon's four valence electrons allow it to form four covalent bonds, which is why it can serve as a versatile 'backbone' for millions of different structures.

2. The organic compound commonly found in nail polish remover, known as _____, belongs to the ketone family.

Answer: C) Propanone

Propanone (also called dimethyl ketone) is the simplest ketone and is widely used as a solvent in nail polish remover.

3. Hydrocarbons are organic compounds that consist exclusively of carbon and hydrogen atoms.

Answer: A) True

As the name implies, 'hydro-' refers to hydrogen and '-carbon' refers to carbon. Molecules like octane and pentane are primary examples.

4. Which of these is a common characteristic of organic molecules like those found in candle wax (paraffin)?

Answer: C) Flammability

Most organic compounds, especially hydrocarbons like candle wax, are highly combustible and burn in the presence of oxygen.

5. All organic compounds must originate from a living organism and cannot be synthesized in a laboratory.

Answer: B) False

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While organic chemistry started with the study of life, scientists can now synthesize millions of organic compounds, like plastics and medicines, in labs.

6. Refineries separate crude oil into different products like gasoline and jet fuel based on which physical property?

Answer: C) Boiling point

Fractional distillation is used to separate organic compounds in oil because different sized carbon chains have different boiling points.

7. A hydrocarbon that contains at least one double bond between carbon atoms is classified as an ____.

Answer: B) Alkene

Alkenes are unsaturated hydrocarbons that contain a carbon-to-carbon double bond, such as ethene.

8. Polymers are large organic molecules made of repeating structural units called monomers.

Answer: A) True

Organic polymers include natural substances like DNA and cellulose, as well as synthetic materials like polyester and polyethylene.

9. In organic chemistry, what does the suffix '-ol' (as in Menthol or Isopropanol) usually indicate?

Answer: C) An alcohol functional group

The '-ol' suffix is used in the systematic naming of alcohols, which contain the hydroxyl (-OH) functional group.

10. When an organic compound burns completely in oxygen, the two main chemical products are water and ____.

Answer: D) Carbon dioxide

Complete combustion of a hydrocarbon always produces carbon dioxide (CO₂) and water vapor (H₂O).