Name: _____ **Date:** _____

Answer Key: Do LEGOs and Leaves Share a Secret? Kindergarten Organic Chemistry Quiz

Evaluate molecular patterns through 10 interactive challenges focusing on carbon chains, biological building blocks, and polymer structures found in daily life.

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1. Imagine you are building a very long train with carbon engine cars. If you want to make a 'polymer' snake, how should the cars be connected?

Answer: A) In a long, repeating chain

Polymers are long chains made of repeating units (monomers), similar to how many train cars attach to form one long snake-like structure.

2. Carbon is like a friendly octopus because it has ___ 'arms' (bonds) to hold onto its friends.

Answer: C) Four

In organic chemistry, a carbon atom almost always forms four bonds, which allows it to create complex and stable shapes.

3. True or False: A diamond ring and a pencil lead are both made of the same 'Carbon' ingredient, just arranged in different patterns.

Answer: A) True

This demonstrates allotropes; though they look different, they are both pure carbon arranged in different geometric structures.

4. Look at a plastic milk jug and a piece of wood. Why are they both part of 'Organic Chemistry'?

Answer: B) Because they both contain Carbon skeletons

Organic chemistry is the study of carbon-based compounds, which includes both natural materials like wood and human-made materials like plastic.

5. If you find a molecule shaped like a perfect circle (a ring), it might be called an ___ compound.

Answer: A) Aromatic

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Aromatic compounds, like those in vanilla or cinnamon, often feature carbon atoms linked together in special ring shapes.

6. True or False: Every single molecule that contains Carbon is definitely alive.

Answer: B) False

While all living things contain carbon, many non-living things like charcoal, plastic, and CO_2 gases also contain carbon.

7. Which of these is the 'backbone' that holds the instructions for your whole body together (DNA)?

Answer: B) A carbon-based organic chain

DNA is a highly complex organic molecule. Without carbon's ability to form long, stable chains, life's code couldn't exist.

8. When we burn organic fuel like wax in a candle, it reacts with oxygen to create heat and ___.

Answer: B) Carbon Dioxide

Combustion of organic materials breaks carbon bonds and combines them with oxygen, typically releasing CO_2.

9. True or False: Scientists can use carbon to build tiny 'nanotube' elevators that are much stronger than steel.

Answer: A) True

Carbon nanotubes are a cutting-edge application of organic structural chemistry, demonstrating carbon's incredible strength in specific arrangements.

10. If you change just one small part of an organic molecule (like moving a LEGO brick), what happens?

Answer: B) It might turn into a totally different substance

In organic chemistry, the arrangement (isomers) or functional groups define the substance; changing the structure changes the identity of the molecule.