

Name: _____ Date: _____

Answer Key: Could You Be a Carbon Architect? Your 2nd Grade Molecule Challenge

Will your Lego skills help you build a forest? Study how tiny carbon chains connect to make the sticky sap and sweet fruit found in nature.

1. Imagine you are building a 'chain' of carbon atoms. If you want to make a long, straight noodle shape instead of a circle, what must you do?

Answer: B) Keep adding new atoms to the ends without touching the start

To make a straight chain (like a piece of string), you keep adding pieces to the ends. If you connected the start and end, it would become a ring.

2. A scientist finds a molecule in a strawberry. If that molecule is built mostly of Carbon atoms, we call it an _____ molecule.

Answer: B) Organic

In science, 'organic' refers to molecules that use carbon as their main building block, especially those found in living things like fruit.

3. True or False: Every single organic molecule in the world looks exactly the same because they all use carbon.

Answer: B) False

Even though they use carbon, these molecules can be shaped like long zig-zags, circles, or messy branches, making them all different!

4. If a molecule's carbon 'skeleton' is shaped like a necklace pulled into a perfect circle, what kind of structure is it?

Answer: C) A ring structure

When carbon atoms connect to form a loop, scientists call it a ring structure.

5. Carbon is a very 'friendly' atom. It has _____ 'arms' (bonds) that it uses to hold onto other atoms at the same time.

Answer: B) Four

Name: _____ Date: _____

Carbon is special because it can form four bonds (like having four hands) to hold onto other atoms to build complex shapes.

6. True or False: Changing the shape of a carbon molecule can change how it smells or tastes.

Answer: A) True

The shape of a molecule is like a key in a lock; different shapes send different signals to our nose and tongue.

7. Look at these two molecules: One is a straight line of 5 carbons. The other is 5 carbons with one sticking out of the middle like a tree limb. How would you describe the second one?

Answer: B) A branched chain

When a carbon atom attaches to the side of a main line, it is called a 'branch,' just like a branch on a tree trunk.

8. To build a molecule that is very strong and hard, like a diamond, carbon atoms must connect in a _____ pattern.

Answer: C) 3D Grid

A diamond is strong because its carbon atoms are linked in a tight, 3D grid that supports itself from all sides.

9. True or False: Carbon is only found in things that are man-made, like plastic toys.

Answer: B) False

Carbon is everywhere! It is in trees, your body, your cat, and the food you eat, as well as in many man-made items.

10. Why do scientists call carbon the 'King of Elements' for building life?

Answer: B) Because it can connect in so many different shapes

Carbon's ability to form chains, rings, and branches allows it to build the millions of different molecules needed for life.