

Name: \_\_\_\_\_ Date: \_\_\_\_\_

## Answer Key: Stuck Like Glue: 3rd Grade Molecular Architects Quiz

Challenge your students to design stable compounds as they predict how atoms connect and build new materials using chemical forces.

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**1. Imagine you are building a new material for a superhero's shield. If atoms are 'sharing' their outer shells equally to stay strong, what type of bond are they creating?**

**Answer:** B) A covalent bond

Covalent bonds occur when atoms share electrons, acting like a handshake that holds them together to form molecules.

**2. True or False: In an ionic bond, one atom acts like a 'giver' and another acts like a 'taker' to create a connection.**

**Answer:** A) True

Ionic bonds are formed when one atom transfers (gives) an electron to another, causing them to stick together due to opposite charges.

**3. In a piece of silver jewelry, the atoms are held together by a shared \_\_\_\_\_ of electrons that lets them bend without breaking.**

**Answer:** B) Sea

Metallic bonding is often described as a 'sea of electrons' because the electrons move freely among all the metal atoms.

**4. If you mix a 'giver' atom (metal) with a 'taker' atom (non-metal), what is the most likely result of their interaction?**

**Answer:** C) They will form an ionic bond

When a metal gives an electron to a non-metal, they become oppositely charged and stick together in an ionic bond.

**5. Potassium Bromide is a crystal that shatters when hit with a hammer. This brittle 'glass-like' property is a common trait of \_\_\_\_\_ bonds.**

**Answer:** C) Ionic

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Ionic compounds form rigid crystal structures that are often brittle, meaning they shatter rather than bend when struck.

**6. True or False: Atoms only bond together because they are bored and want to change color.**

**Answer:** B) False

Atoms bond to find stability, usually by filling their outer electron shells to reach a 'happy' or balanced state.

**7. Why can an aluminum soda can be crushed into a ball without the metal atoms falling apart?**

**Answer:** B) Metallic bonds allow atoms to slide past each other

In metallic bonds, the 'sea' of electrons acts like a cushion, allowing metal atoms to move and slide while staying connected.

**8. When two atoms of the same type, like two Oxygen atoms, join together to form the air we breathe, they always \_\_\_\_\_ their electrons.**

**Answer:** B) Share

When two non-metals (like Oxygen) bond, they share electrons in a covalent bond to achieve a stable balance.

**9. True or False: A molecule is the name for a group of atoms held together by chemical bonds.**

**Answer:** A) True

A molecule is the smallest unit of a compound that still has all the properties of that compound, held together by bonds.

**10. If you were a scientist trying to create a liquid that stays together in drops, which type of bonding would you focus on for those small molecules?**

**Answer:** B) Covalent bonding

Many liquids, like water or oils, are made of molecules held together internally by covalent bonds.