Name: _____ **Date:** _____

Molecular Architecture: A 6th Grade Quest into Atomic Velcro

Go beyond static diagrams to construct complex molecular profiles and predict bond behaviors through chemical reasoning and structural synthesis.

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1. Imagine you are an engineer designing a new heat-resistant ceramic. Which type of bond would you prioritize for its high melting point and crystal lattice structure?

A. Metallic bonding
B. Ionic bonding
C. Non-polar covalent bonding
D. Hydrogen bonding

2. A mystery substance found in a meteor is highly conductive and can be hammered into thin sheets. This suggests the presence of a _____.

A. Covalent network
B. Ionic crystal
C. Metallic bond
D. Molecular gas

3. In a covalent bond between two Phosphorus atoms, the electrons are shared equally because the atoms have the same pull on the electrons.

A. True
B. False

4. Why does a molecule like Ammonia (NH_3) stay together differently than a salt crystal?

A. Ammonia atoms share electrons to fill their outer shells.
B. Ammonia atoms steal electrons to become magnetic.
C. Ammonia is held together by gravity rather than bonds.
D. Ammonia uses metallic 'glue' to hold the Nitrogen in place.

5. If an atom of Potassium (K) meets an atom of Iodine (I), the Potassium will _____ an electron to achieve a stable octet.

A. Share
B. Transfer
C. Destroy
D. Double

6. In the molecule Carbon Tetrachloride (CCl_4), one Carbon atom bonds with four Chlorine atoms. This is an example of what structural concept?

A. Ionic Transfer
B. Metallic Lattice

C. Covalent Bonding
D. Hydrogen Attraction

7. An ionic bond usually occurs between two elements found on the far left side of the Periodic Table.

A. True
B. False

8. The tendency of an atom to attract a shared pair of electrons toward itself is called _____.

A. Radioactivity
B. Electronegativity
C. Magnetism
D. Conductivity

9. Evaluate this scenario: A substance dissolves in water and the resulting solution conducts electricity. What was the most likely bond type in the original solid?

A. Non-polar covalent
B. Metallic
C. Ionic
D. Noble Gas

10. A triple covalent bond involve sharing six total electrons between two atoms.

A. True
B. False