

Name: _____ Date: _____

Zap the Octet: 9th Grade Chemical Bonding Essentials Quiz

How do elements achieve a full valence shell? Recall the basic mechanisms behind electron sharing and transfer in this fundamental assessment.

1. Which type of chemical bond forms when one atom 'steals' an electron from another, resulting in an electrostatic attraction between a cation and an anion?

- A. Covalent bond
- B. Ionic bond
- C. Metallic bond
- D. Hydrogen bond

2. In a molecule of nitrogen gas (N₂), the two nitrogen atoms are held together by a ____ bond because they share electrons equally.

- A. Ionic
- B. Hydrogen
- C. Covalent
- D. Metallic

3. True or False: Most atoms are more stable when they have eight electrons in their outermost shell, a concept known as the Octet Rule.

- A. True
- B. False

4. What is the primary reason why silver (Ag) is such an excellent conductor of electricity?

- A. It contains rigid ionic crystals
- B. It has a 'sea' of delocalized electrons
- C. It shares electrons in fixed covalent pairs
- D. It undergoes radioactive decay

5. Potassium iodide (KI) is a crystalline solid with a high melting point. Based on these properties, KI is likely held together by ____ bonds.

- A. Covalent
- B. Metallic
- C. Ionic
- D. Non-polar

6. True or False: Covalent bonds are most commonly formed between a metal and a nonmetal.

- A. True
- B. False

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7. Which of these substances is an example of a diatomic molecule held together by a covalent bond?

- A. Lithium bromide (LiBr)
- B. Aluminum (Al)
- C. Chlorine gas (Cl₂)
- D. Sodium oxide (Na₂O)

8. The property of a metal that allows it to be hammered into thin sheets without breaking is called _____, which is possible because of its flexible bonding.

- A. Malleability
- B. Brittleness
- C. Polarity
- D. Solubility

9. True or False: In a double covalent bond, atoms share a total of four electrons (two pairs).

- A. True
- B. False

10. When an atom of Calcium (Ca) loses two electrons to form a bond, what is the resulting charge of the ion?

- A. -2
- B. +1
- C. Neutral
- D. +2