# **Atoms and Molecules Comprehension Check**

For questions 1-5, match each vocabulary term to the correct definition:

|  |  |
| --- | --- |
| 1. Atom | a. a substance made of only one kind of atom |
| 2. Compound | b. tiny particles that make up all matter |
| 3. Element | c. an atom with a negative or positive change as a result of having lost or gained one or more electron |
| 4. Ion | d. a combination of two or more atoms |
| 5. Molecule | e. a substance that contains more than one kind of atom |

1. Atom –
2. Compound –
3. Element –
4. Ion –
5. Molecule –
6. How do protons, neutrons, and electrons form together to make atoms?
7. Describe **one** way in which atoms share, give, or take electrons as they form chemical bonds.
8. Why is it important to understand the role of electron shells in atoms?
9. Fill in the blanks: If an atom tends to lose an electron, its valence is \_\_\_\_\_\_\_\_\_\_, but if an atom tends to gain an electron, its valence is \_\_\_\_\_\_\_\_\_\_.
10. How does the structure of a molecule affect its properties?

# **Atoms and Molecules Comprehension Check Answer Key**

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1. Atom – b
2. Compound – e
3. Element – a
4. Ion – c
5. Molecule – d
6. How do protons, neutrons, and electrons form together to make atoms?
   1. Atoms are tiny little particles that make up all matter. All atoms are made up of even tinier particles. Atoms contain a nucleus at their center which consists of protons (positive charge) and neutrons (no charge). Electrons are negatively charged and move freely around the nucleus in special regions called shells.
7. Describe **one** way in which atoms share, give, or take electrons as they form chemical bonds.
   1. Chemical bonds form when atoms share, give, or take away electrons. Students may describe ionic bonds (occur when atoms gain or lose an electron) or covalent bonds (occur when atoms share electrons).
8. Why is it important to understand the role of electron shells in atoms?
   1. Electron shells are found around the nucleus, protons, and neutrons of an atom. They are used to organize the electrons within the atom. Electrons in shells’ outermost rings have the greatest amount of energy and can escape. When electrons leave their atom’s shell and/or join another, they create chemical bonds between the atoms.
9. Fill in the blanks: If an atom tends to lose an electron, its valence is positive, but if an atom tends to gain an electron, its valence is negative.
10. How does the structure of a molecule affect its properties?
    1. Molecules come in many shapes and sizes, and their structures determine the properties they have. For example, graphite and diamonds are both made of only carbon, but graphite is soft, and diamonds are incredibly hard. Graphite contains carbon atoms linked together in flat, sheetlike layers, making it soft, slippery, and the perfect material for a pencil. Diamonds are also made solely of carbon but are among the hardest elements on Earth because their atoms are linked together in a pyramid-like structure.