# **Chemistry and Matter Comprehension Check**

For questions 1-3, match each state of matter to the correct description:

|  |  |
| --- | --- |
| 1. Solid | a. has no definite shape and takes on the shape of its container; molecules are not packed together and can move freely past one another |
| 2. Liquid | b. has no definite shape and expands to fill its container; molecules are not in contact with one another and zip around |
| 3. Gas | c. has a definite shape; molecules are packed closely together and vibrate in place |

1. Solid –
2. Liquid –
3. Gas –
4. How do protons, electrons, and neutrons work to form atoms?
5. Describe molecules and elements.
6. What are physical properties of matter? What attributes are considered physical properties? Provide at least three examples.
7. What are chemical reactions? How do they cause changes in chemical properties?
8. What happens at the molecular level when a liquid freezes into a solid?
9. Sometimes people wake up to frost on very cold mornings. How does deposition cause this physical change?
10. What is the difference between a substance’s melting point and its boiling point?

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1. Solid – c
2. Liquid – a
3. Gas – b
4. How do protons, electrons, and neutrons work to form 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.
5. Describe molecules and elements.
   1. Molecules are combinations of two or more atoms. Elements are special molecules that are made of only one type of atom. Molecules can also be made of many types of atoms. When this happens, they are called compounds.
6. What are physical properties of matter? What attributes are considered physical properties? Provide at least three examples.
   1. Physical properties of matter refer to the things that can be seen or measured. For example, size, color, shape, weight, mass, volume, density, temperature, and viscosity are all considered physical properties.
7. What are chemical reactions? How do they cause changes in chemical properties?
   1. Chemical reactions are processes by which one or more substances are chemically converted into one or more different substances. Chemical properties can only be observed during chemical reactions.
8. What happens at the molecular level when a liquid freezes into a solid?
   1. When a liquid freezes into a solid, it undergoes a physical change of state. As liquid is cooled toward its freezing point, the energy of its molecules decreases. These slow-moving molecules are eventually brought together through attractive forces, turning the substance from a liquid to a solid.
9. Sometimes people wake up to frost on very cold mornings. How does deposition cause this physical change?
   1. On cold mornings, people can sometimes see frost because of deposition. During the day, the air and ground are warmed by the sun. Once the sun sets, air temperature drops significantly as warmer air rises from the ground and colder air sinks towards it. Water molecules in the cold air latch onto the solid ground and change into frost, a solid. Deposition occurs when gases change to solids, skipping the liquid phase.
10. What is the difference between a substance’s melting point and its boiling point?
    1. Melting points and boiling points are related as they both have to do with heating a substance to a certain temperature. A melting point is the temperature at which a solid becomes a liquid. A boiling point is the temperature at which a substance turns from a liquid to a gas.