

Reinforcement Solids, Liquids, and Gases

Directions: Answer each question or respond to each statement on the lines provided.

1. Solids, liquids, and gases are the forms of matter found commonly on Earth.

How are these states of matter similar? _____

How are these states of matter different? _____

2. Kinetic energy is energy of motion. Which state of matter has the most kinetic energy?

The least kinetic energy? _____

3. The molecules that make up water attract each other. What happens to the amount of attractive force between two water molecules if they move apart from each other?

What if they move closer to each other? _____

4. If you could see atoms, in which state of matter would you see them staying mostly in one place and moving with short back-and-forth motions?

How does such motion affect the matter's volume and shape? _____

5. Knowing whether or not matter has fixed shape and fixed volume allows you to determine the state of that matter. Explain the properties of shape and volume for a liquid.

Directions: Draw a line between the state of matter in Column I and an example of that state of matter in Column II.

Column I

- 6. plasma
- 7. gas
- 8. liquid
- 9. solid

Column II

- A. coin
- B. milk
- C. steam
- D. lightning

Enrichment

Things Are Heating Up

Burning a piece of wood causes a chemical change to occur. The matter in the wood changes to produce gases and charcoal. Heat can cause many kinds of chemical changes, but not all changes caused by heat are chemical changes. Often, heat causes a physical change.

Heating and Cooling

Heating or cooling materials can change their state from solid to liquid, liquid to gas, or back again. These changes in the state of matter

are physical changes. When water freezes or melts, a physical change has occurred.

Exceptions to the Rule

Most materials expand when they are heated and contract as they cool. Two exceptions to this rule are water and rubber. These substances expand when they are cooled and contract when they are heated. For example, when water freezes, it expands to fill a larger space than the liquid water did.

Directions: Answer each question in the space provided.

1. **Apply** Why should you never put a full, sealed bottle of water in the freezer?

2. **Use** the information in the paragraphs above to explain why many bridges are built with gaps (called expansion joints) in them?

3. **Apply** Why should you never pour hot liquids into a cold drinking glass?

4. **Conclude** During the winter in some northern states, potholes—holes or large cracks in the pavement—appear in the street. What causes them?
