

Chapter 8

REINFORCEMENT

● Matter and Temperature

Answer the following questions in the blanks provided. Use complete sentences where appropriate.

1. What are the three common states of matter?

a. _____ b. _____ c. _____

What is the fourth state of matter? _____

2. Complete the following chart describing the shape and volume for the three common states of matter.

State of Matter	Volume	Shape

How does the fourth state of matter differ from the other three? _____

3. Use the kinetic theory of matter to explain the behavior of the three common states of matter.

4. In general, when you heat a substance, it expands. This phenomenon is called thermal expansion. Use the kinetic theory to explain thermal expansion. Give an example of thermal expansion that you have observed. _____

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Use with Text Pages 222–223

**● Fresh Water:
Will There Be Enough?**

Write definitions for the following terms in the space provided.

1. fresh water _____

2. polluted water _____

3. thermal pollution _____

Answer the following questions on the lines provided.

4. In what ways can groundwater be polluted by farms? _____

5. What can you do daily in your own life to save water and reduce water pollution?

6. Using Table 8-1 in your textbook, explain why self-service car washes are permitted to stay open when city officials forbid home car washing because of a drought? _____

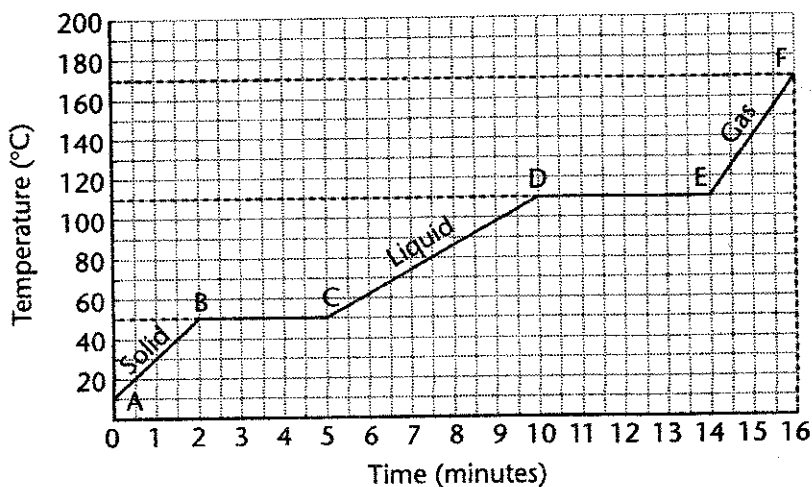
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● Changes in State

Look carefully at the graph. It was drawn from the data collected when a substance was heated at a constant rate. To heat at a constant rate means to add heat evenly as time passes. Use the graph to complete the paragraphs that follow.



At the start of observations, Point A, the substance exists in the _____ state. The temperature at this point is _____. As energy is _____, the temperature of the substance rises at a constant rate for two minutes. At Point B, the temperature is _____, and the solid begins to _____. The temperature remains constant until the change from solid to _____ is complete. It has taken three minutes to add enough energy to melt the solid completely. From Point C to Point D, the substance is in the _____ state. Its temperature rises at a constant rate to _____. The temperature remains constant while the liquid changes to a _____. At Point E, the substance exists as a _____. Its temperature rises _____ as energy is added.

When the gaseous substance is allowed to cool, it _____ energy. The cooling curve will be the reverse of the warming curve. Energy will be released as the substance changes from a _____ to a _____ and also from a _____ to a _____. The amount of energy released during condensation will be the same as the amount _____ during vaporization.

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REINFORCEMENT**● Behavior of Gases**

Write the definitions for the following terms in the spaces provided.

1. Boyle's law _____

2. Charles's law _____

3. pressure _____
4. absolute zero _____

Explain what will happen in each of the following cases.

5. If the temperature remains constant, what will happen to the pressure of a gas if you decrease the volume of the container that holds the gas? _____
6. If the volume of a container of gas remains constant, what will happen to the pressure of a gas if you increase temperature? _____

Answer the following questions regarding temperature.

7. On the Kelvin scale, what is the freezing point of water? _____
8. On the Kelvin scale, what is the boiling point of water? _____
9. On the Celsius scale, what are the freezing and boiling points of water?

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● Uses of Fluids

Determine whether the italicized term makes each statement true or false. If the statement is true, write the word "true" in the blank. If the statement is incorrect, write in the blank the term that makes the statement true.

- _____ 1. A fluid is a liquid or a *solid*.
- _____ 2. Buoyancy is the ability of a fluid to exert a *downward* force on an object immersed in it.
- _____ 3. If the buoyant force on an object is *greater than* the weight of the object, the object will sink.
- _____ 4. The buoyant force on an object in a fluid is *equal to* the weight of the fluid displaced by the object.
- _____ 5. *Archimedes'* principle states that pressure applied to a fluid is transmitted unchanged throughout the fluid.
- _____ 6. As the velocity of a fluid increases, the pressure exerted by the fluid *increases*.
- _____ 7. The Venturi effect describes how fluids flow *faster* when forced to flow through narrow spaces.

Answer the following questions on the lines provided.

8. A hydraulic machine can be used to lift extremely heavy objects. Why is the fluid in the hydraulic machine a liquid rather than a gas? _____

9. A block of wood is floating in water. The weight of the part of the block above water is one-third of the total weight of the block. What is the weight of the water displaced by the block of wood? Explain your answer in terms of Archimedes' principle. _____

10. A passenger jet in the air increases its speed. Does the downward force of air on the top of the wings increase or decrease? Does the net lifting force of the air on the wings increase or decrease? Explain your answer. _____

