

Chapter 8

STUDY GUIDE

● Matter and Temperature

Match the definition in Column II with the term in Column I. Write the letter of the correct definition in the blank on the left.

Column I

- _____ 1. kinetic theory of matter
- _____ 2. plasma
- _____ 3. crystals
- _____ 4. solid
- _____ 5. amorphous material
- _____ 6. steam
- _____ 7. thermal expansion
- _____ 8. liquid
- _____ 9. gas
- _____ 10. ice

Column II

- a. water vapor
- b. state of matter with no definite shape but with definite volume
- c. solid which is not made of crystals
- d. state of matter that has no definite shape and no definite volume
- e. Matter expands when it gets hotter and contracts when it cools.
- f. state of matter with definite shape and definite volume
- g. water in the solid state
- h. Tiny particles in motion make up all matter.
- i. particles arranged in repeating geometric patterns
- j. gaslike mixture of charged particles

Use the words in the box to fill in the blanks.

shape	vibrate	plasma	energy
spread	volume	contracts	crystals
heated	position	flow	separate

In solids, particles move back and forth, but do not change _____.

Different kinds of solids have _____ of different shapes. Particles in a liquid have more energy than do solid particles. Liquid particles can _____ over and around each other. Because of this kind of particle motion, liquids are able to _____.

Because particles of a liquid are very close to one another, a liquid has a definite _____. The particles in a gas have more _____ than do liquid particles. Gas particles can completely _____ from one another. A gas does not have a definite _____ or volume. The most common form of matter in the universe is _____.

Matter expands when it is _____. Matter expands because particles _____ apart in all directions. Matter _____ when it is cooled.

Chapter 8

STUDY GUIDE

Use with Text Pages 222-223

● Fresh Water: Will There Be Enough?

Complete the following sentences using words from pages 222-223 in your textbook. Then look for these words in the word search.

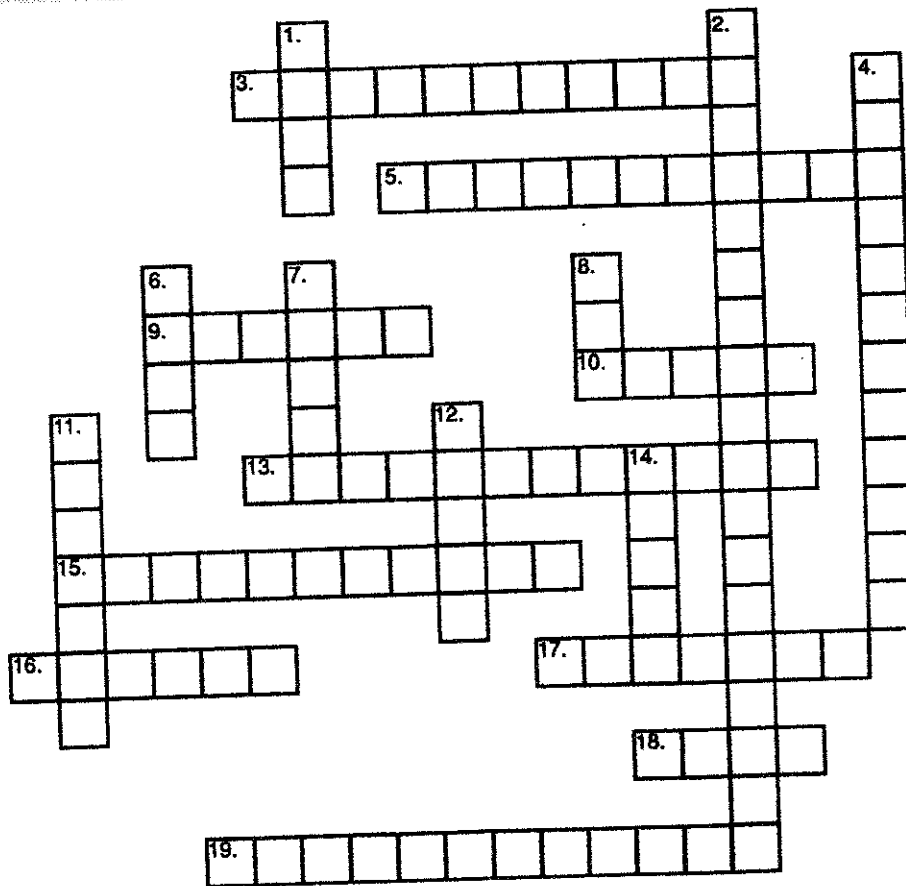
- _____ 1. For living things, the most important liquid on Earth is _____.
(2 words)
- _____ 2. _____ water refers to water that contains such high levels of
unwanted materials that it is unacceptable for use.
- _____ 3. _____ chemicals from home use may end up in our water supply
if they are not disposed of properly.
- _____ 4. _____, herbicides, and pesticides used on farms may enter the
groundwater.
- _____ 5. The excess heat in water is called _____ pollution.
- _____ 6. If water temperature is changed too much, some _____ that live
in the water will die.
- _____ 7. One way to reduce water pollution is to use products that are
_____ for the _____.
- _____ 8. _____ are trying to develop better ways to contain and _____ of
industrial wastes.

F O S O A N P S M S C A R
 W Y R T A W H S T R F L E
 B U E R E T A W H S E R F
 A J Z N O C A P E Z N P A
 R I I W V A S I R A V O S
 C C L U R I V E M W I L R
 B I I S M S I N A G R O E
 I T T X D E T U L L O P H
 G A R O O S I E N U N T T
 S L E E T T H W M M I N
 O F F D I S P O S E E O L
 D A M B R F P J U Q N R A
 L P S C I E N T I S T S T

Chapter 8

STUDY GUIDE

● Changes in State



Across

3. The state of a material depends on this.
5. change of a solid directly to a gas
9. When ice melts, the particles of solid water _____ energy.
10. gaseous water
13. energy needed to change a material from solid to liquid (3 words)
15. change of a liquid to gas below the boiling point
16. has definite volume but no definite shape
17. The kinetic energy of a substance is the _____ kinetic energy of its particles.
18. to change from a liquid to a gas at temperatures above those normal to the liquid state
19. process that occurs during boiling

Down

1. to change from solid to liquid
2. energy needed to change a material from liquid to gas (3 words)
4. occurs when a gas cools and changes to a liquid
6. Liquids have a definite volume and _____.
7. a unit of heat
8. no definite shape, no definite volume
11. theory used to explain changes of state
12. has a definite volume and shape
14. determined by motion and spacing of particles

Chapter 8

Use with Text Pages 228–233

STUDY GUIDE

● Behavior of Gases

Use the words in the box to fill in the blanks.

force	constantly	size	absolute	liquids
increase	volume	boiling	decrease	pressure
kinetic	particles	kilopascals	larger	decrease
pressure	Charles's	Boyle's	temperature	increased

Gases in Earth's atmosphere exert _____ on everything. According to the _____ theory, the particles of a gas are _____ moving. Every time gas particles hit something and bounce off, they exert a tiny force. Pressure is this amount of _____ exerted per unit of area. Air pressure at sea level is 101.3

The amount of force exerted by a gas depends on the _____ of its container. _____ law states that if a sample of gas is kept at constant _____, decreasing the volume will _____ the pressure the gas exerts. If you increase the volume, the pressure will _____. According to the kinetic theory, if you do not change the amount of gas or its temperature but _____ the size of the container, the particles will strike the walls more often and the pressure will rise. When the size of the container is _____, the pressure is smaller because the _____ hit the walls less often.

According to _____ law, if a sample of gas is kept at constant _____, the volume increases if the temperature is _____.

Charles's measurements suggested that the _____ of a gas would become zero at a temperature of $-273\text{ }^{\circ}\text{C}$. The temperature $-273\text{ }^{\circ}\text{C}$ is called _____ zero. All gases become _____ when cooled to their _____ points.

Chapter 8

Use with Text Pages 234-239

STUDY GUIDE

● Uses of Fluids

Match the definitions in Column II with the terms in Column I. Write the letter of the correct definition in the blank on the left.

Column I

- _____ 1. fluid
 _____ 2. Archimedes' principle
 _____ 3. pressure
 _____ 4. hydraulic lift
 _____ 5. Bernoulli's principle
 _____ 6. buoyancy
 _____ 7. Pascal's principle

Column II

- a. the ability of a fluid to exert an upward force on an object immersed in it
 b. a gas or a liquid
 c. Pressure applied to a fluid is transmitted unchanged throughout the fluid.
 d. force per unit area
 e. The buoyant force on an object in a fluid is equal to the weight of the fluid displaced by the object.
 f. operates on Pascal's principle
 g. As the velocity of a fluid increases, the pressure exerted by the fluid decreases.

Use the words in the list to fill in the blanks.

Bernoulli's	Archimedes'	less	faster	farther	floats
hydraulic	piston	buoyant force	pressure	areas	
sinks	liquid	connected	Pascal's	upward	

The amount of _____ determines whether an object will sink or float in a fluid. If the buoyant force is less than an object's weight, the object _____.

If the buoyant force equals an object's weight, the object _____.

_____ principle can be used to explain the buoyant force on an object submerged in a fluid.

Machines such as _____ lifts that multiply forces use _____ principle. In a hydraulic lift, a _____ is placed in two _____ cylinders. Each cylinder has a

_____ that can move up and down. Also, the cylinders have different cross sectional _____. In this device, the _____ on each piston will be the same. However, the force will be greater on the piston with larger area.

_____ principle explains why a pitched baseball curves and how airplanes fly. Air travels _____ over the top of the wing than over the bottom. Thus, the air travels _____ over the top of the wing than over the bottom. Pressure above the wing is _____ than pressure below it. There is net _____ force on the wing.