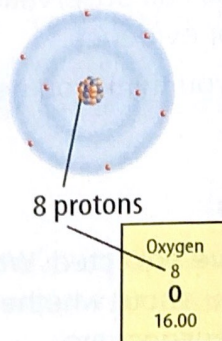


Key Concepts Summary

Lesson 1: Classifying Matter

- A **substance** is a type of **matter** that always is made of atoms in the same combinations.
- **Atoms** of different elements have different numbers of protons.
- The composition of a substance cannot vary. The composition of a **mixture** can vary.
- Matter can be classified as either a substance or a mixture.

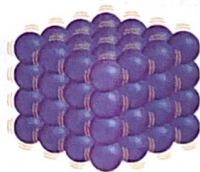


Vocabulary

- matter p. 231
- atom p. 231
- substance p. 233
- element p. 233
- compound p. 234
- mixture p. 235
- heterogeneous mixture p. 235
- homogeneous mixture p. 235
- dissolve p. 235

Lesson 2: Physical Properties

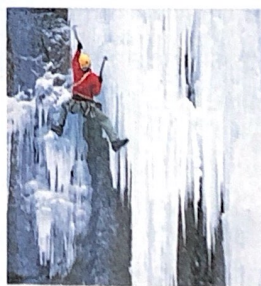
- **Physical properties** of matter include size, shape, texture, and state.
- Physical properties such as **density**, melting point, boiling point, and size can be used to separate mixtures.



- physical property p. 240
- mass p. 242
- density p. 243
- solubility p. 244

Lesson 3: Physical Changes

- A change in energy can change the state of matter.
- When something dissolves, it mixes evenly in a substance.
- The masses before and after a change in matter are equal.



- physical change p. 249

Lesson 4: Chemical Properties and Changes

- **Chemical properties** include ability to burn, acidity, and ability to rust.
- Some signs that might indicate **chemical changes** are the formation of bubbles and a change in odor, color, or energy.
- Chemical equations are useful because they show what happens during a chemical reaction.
- Some factors that affect the rate of chemical reactions are temperature, **concentration**, and surface area.



- chemical property p. 256
- chemical change p. 257
- concentration p. 260



Vocabulary eFlashcards
Vocabulary eGames

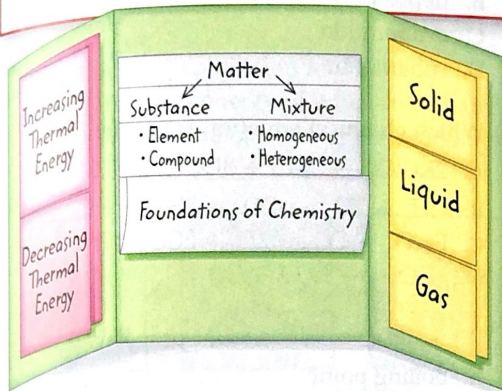


Personal Tutor

FOLDABLES®

Chapter Project

Assemble your lesson Foldables as shown to make a Chapter Project. Use the project to review what you have learned in this chapter. Fasten the Foldable from Lesson 4 on the back of the board.



Use Vocabulary

Give two examples of each of the following.

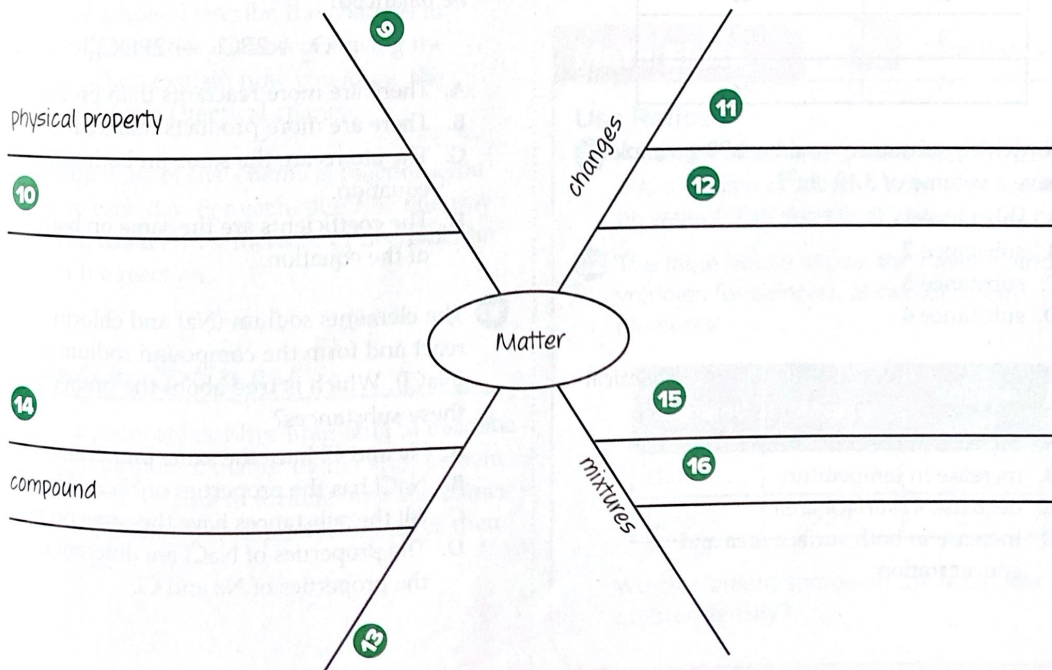
- 1 element
- 2 compound
- 3 homogeneous mixture
- 4 heterogeneous mixture
- 5 physical property
- 6 chemical property
- 7 physical change
- 8 chemical change

Link Vocabulary and Key Concepts



Interactive Concept Map

Copy this concept map, and then use vocabulary terms from the previous page to complete the concept map.



Chapter 7 Review

Understand Key Concepts

- 1 The formula AgNO_3 represents a compound made of which atoms?
- 1 Ag, 1 N, 1 O
 - 1 Ag, 1 N, 3 O
 - 1 Ag, 3 N, 3 O
 - 3 Ag, 3 N, 3 O

- 2 Which is an example of an element?

- air
- water
- sodium
- sugar

- 3 Which property explains why copper often is used in electrical wiring?

- conductivity
- density
- magnetism
- solubility

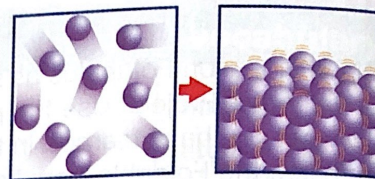
- 4 The table below shows densities for different substances.

Substance	Density (g/cm^3)
1	1.58
2	0.32
3	1.52
4	1.62

For which substance would a 4.90-g sample have a volume of 3.10 cm^3 ?

- substance 1
 - substance 2
 - substance 3
 - substance 4
- 5 Which would decrease the rate of a chemical reaction?
- increase in concentration
 - increase in temperature
 - decrease in surface area
 - increase in both surface area and concentration

- 6 Which physical change is represented by the diagram below?

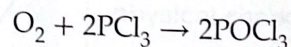


- condensation
 - deposition
 - evaporation
 - sublimation
- 7 Which chemical equation is unbalanced?
- $2\text{KClO}_3 \rightarrow 2\text{KCl} + 3\text{O}_2$
 - $\text{CH}_4 + 2\text{O}_2 \rightarrow \text{CO}_2 + 2\text{H}_2\text{O}$
 - $\text{Fe}_2\text{O}_3 + \text{CO} \rightarrow 2\text{Fe} + 2\text{CO}_2$
 - $\text{H}_2\text{CO}_3 \rightarrow \text{H}_2\text{O} + \text{CO}_2$

- 8 Which is a size-dependent property?

- boiling point
- conductivity
- density
- mass

- 9 Why is the following chemical equation said to be balanced?

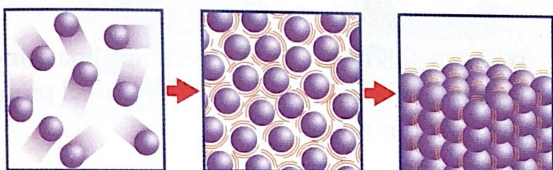


- There are more reactants than products.
 - There are more products than reactants.
 - The atoms are the same on both sides of the equation.
 - The coefficients are the same on both sides of the equation.
- 10 The elements sodium (Na) and chlorine (Cl) react and form the compound sodium chloride (NaCl). Which is true about the properties of these substances?
- Na and Cl have the same properties.
 - NaCl has the properties of Na and Cl.
 - All the substances have the same properties.
 - The properties of NaCl are different from the properties of Na and Cl.



Critical Thinking

- 11 Compile** a list of ten materials in your home. Classify each material as an element, a compound, or a mixture.
- 12 Evaluate** Would a periodic table based on the number of electrons in an atom be as effective as the one shown in the back of this book? Why or why not?
- 13 Develop** a demonstration to show how weight is not the same thing as mass.
- 14 Construct** an explanation for how the temperature and energy of a material changes during the physical changes represented by the diagram below.



- 15 Revise** the definition of physical change given in this chapter so it mentions the type and arrangement of atoms.
- 16 Find an example** of a physical change in your home or school. Describe the changes in physical properties that occur during the change. Then explain how you know the change is not a chemical change.
- 17 Develop** a list of five chemical reactions you observe each day. For each, describe one way that you could either increase or decrease the rate of the reaction.

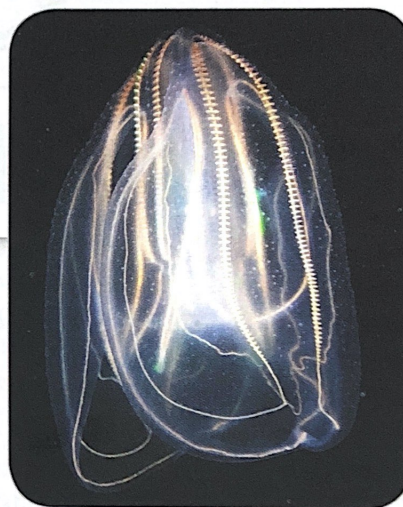
Writing in Science

- 18 Write** a poem at least five lines long to describe the organization of matter by the arrangement of its atoms. Be sure to include both the names of the different types of matter as well as their meanings.

REVIEW

**THE
BIG
IDEA**

- 19** Explain how you are made of matter that undergoes changes. Provide specific examples in your explanation.
- 20** How does the photo below show an example of a physical change, a chemical change, a physical property, and a chemical property?



Math Skills



Math Practice

Use Ratios

- 21** A sample of ice at 0°C has a mass of 23 g and a volume of 25 cm^3 . Why does ice float on water? (The density of water is 1.00 g/cm^3 .)
- 22** The table below shows the masses and the volumes for samples of two different elements.

Element	Mass (g)	Volume (cm^3)
Gold	386	20
Lead	22.7	2.0

Which element sample in the table has greater density?

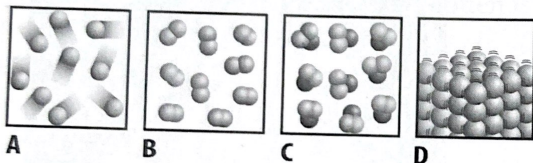
Standardized Test Practice

Record your answers on the answer sheet provided by your teacher or on a sheet of paper.

Multiple Choice

- 1 Which describes how mixtures differ from substances?
- A Mixtures are homogeneous.
 - B Mixtures are liquids.
 - C Mixtures can be separated physically.
 - D Mixtures contain only one kind of atom.

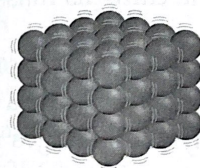
Use the figure below to answer question 2.



- 2 Which image in the figure above is a model for a compound?
- A A
 - B B
 - C C
 - D D
- 3 Which is a chemical property?
- A the ability to be compressed
 - B the ability to be stretched into thin wire
 - C the ability to melt at low temperature
 - D the ability to react with oxygen
- 4 You drop a sugar cube into a cup of hot tea. What causes the sugar to disappear in the tea?
- A It breaks into elements.
 - B It evaporates.
 - C It melts.
 - D It mixes evenly.

- 5 Which is an example of a substance?
- A air
 - B lemonade
 - C soil
 - D water

Use the figure below to answer question 6.



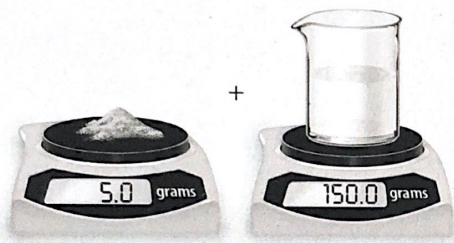
- 6 The figure above is a model of atoms in a sample at room temperature. Which physical property does this sample have?
- A It can be poured.
 - B It can expand to fill its container.
 - C It cannot easily change shape.
 - D It has a low boiling point.
- 7 Which observation is a sign of a chemical change?
- A bubbles escaping from a carbonated drink
 - B iron filings sticking to a magnet
 - C lights flashing from fireworks
 - D water turning to ice in a freezer



8 Zinc, a solid metal, reacts with a hydrochloric acid solution. Which will increase the reaction rate?

- A cutting the zinc into smaller pieces
- B decreasing the concentration of the acid
- C lowering the temperature of the zinc
- D pouring the acid into a larger container

Use the figure below to answer question 9.



9 In the figure above, what will be the mass of the final solution if the solid dissolves in the water?

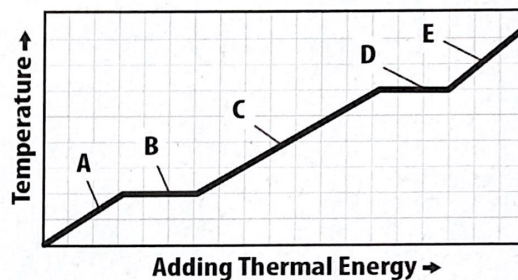
- A 5 g
- B 145 g
- C 150 g
- D 155 g

10 Which is NOT represented in a chemical equation?

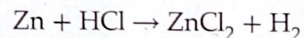
- A chemical formula
- B product
- C conservation of mass
- D reaction rate

Constructed Response

Use the graph below to answer questions 11 and 12.



- 11 Use the graph above to explain why ice will keep water cold on a hot day.
- 12 Use two sections of the graph to explain what happens when you put a pot of cold water on a stove to boil. Specify which two sections you used.
- 13 Describe how you would separate a mixture of sugar, sand, and water.
- 14 The reaction of zinc metal with hydrochloric acid produces zinc chloride and hydrogen gas. A student writes the following to represent the reaction.



Is the equation correct? Use conservation of mass to support your answer.

NEED EXTRA HELP?

If You Missed Question...

Go to Lesson...

1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1	4	3	1	2	4	4	3	4	3	3	2	4