Skills Worksheet

Vocabulary and Section Summary A

Elements

VOCABULARY

In your own words, write a definition of the following terms in the space provided.

1. element

_____

_____

2. pure substance

_____

_____

3. metal

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_____

4. nonmetal

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_____

5. metalloid

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_____

SECTION SUMMARY

Read the following section summary.

• A substance in which all of the particles are alike is a pure substance.

• An element is a pure substance that cannot be broken down into anything simpler by physical or chemical means.

• Each element has a unique set of physical and chemical properties.

• Elements are classified as metals, nonmetals, or metalloids, based on their properties.

Skills Worksheet

Vocabulary and Section Summary A

Compounds

VOCABULARY

In your own words, write a definition of the following term in the space provided.

  1. compound

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_____

_____

SECTION SUMMARY

Read the following section summary.

- A compound is a pure substance composed of two or more elements.

- During a chemical reaction, the atoms of two or more elements react with each other to form molecules of compounds.

- Each compound has unique physical and chemical properties that differ from those of the elements that make up the compound.

- Compounds can be broken down into simpler substances only by chemical changes.

Name _____ Class _____ Date _____

Vocabulary and Section Summary A

Mixtures

VOCABULARY

In your own words, write a definition of the following terms in the space provided.

1. mixture

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_____

_____

2. solution

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_____

3. solute

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_____

_____

4. solvent

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_____

5. concentration

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_____

_____

6. solubility

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_____

_____

Vocabulary and Section Summary A *continued*

SECTION SUMMARY

Read the following section summary.

- A mixture is a combination of two or more substances, each of which keeps its own characteristics.

- Mixtures can be separated by physical means, such as filtration and evaporation.

- A solution is a mixture that appears to be a single substance but is composed of a solute dissolved in a solvent.

- Concentration is a measure of the amount of solute dissolved in a given amount of solvent.

- The solubility of a solute is the ability of the solute to dissolve in a solvent at a certain temperature.

Name _____ Class _____ Date _____

Chapter Review

USING VOCABULARY

_____ 1. **Academic Vocabulary** In the sentence "The constituent elements of water are hydrogen and oxygen," what does the word *constituent* mean?
   a. empowered to elect
   b. component
   c. two
   d. only

Complete each of the following sentences by choosing the correct term from the word bank.

compound   element   solution
solute   nonmetal   metal

2. A(n) _____ has a definite ratio of components.

3. A(n) _____ is a pure substance that cannot be broken down into simpler substances by chemical means.

4. A(n) _____ is an element that is brittle and dull.

5. The _____ is the substance that dissolves to form a solution.

UNDERSTANDING CONCEPTS
Multiple Choice

_____ 6. Which of the following statements describes elements?
   a. All of the particles in the same element are different.
   b. Elements can be broken down into simpler substances.
   c. Elements have unique sets of properties.
   d. Elements cannot be joined in chemical reactions.

_____ 7. Which of the following best describes chicken noodle soup?
   a. element   **c.** compound
   b. mixture   **d.** solution

_____ 8. An element that conducts thermal energy well and is easily shaped is a
   a. metal.   **c.** nonmetal.
   b. metalloid.   **d.** None of the above

┃ Chapter Review *continued*

_____ **9.** Which of the following substances can be separated into simpler substances only by chemical means?

a. sodium   **c.** water

b. salt water   **d.** gold

Short Answer

INTERPRETING GRAPHICS

The pie graphs below show the composition of citric acid and table sugar by element (percentage by mass).

Use the pie graphs to answer the next three questions.

Composition of Citric Acid

58.3% Oxygen

Carbon

4.2% Hydrogen

Composition of Table Sugar

51.5% Oxygen

42.1% Carbon
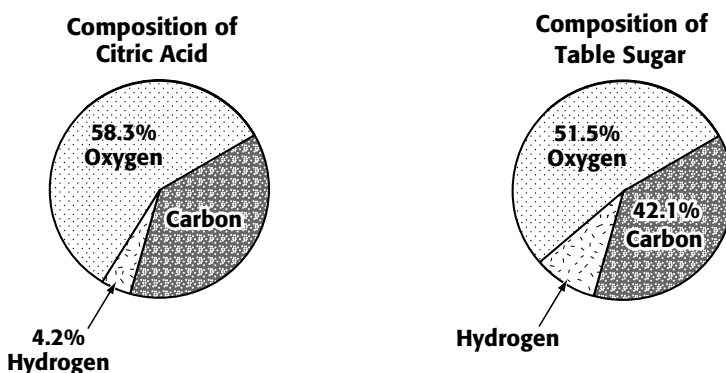
Hydrogen

10. Analyzing What is the percentage by mass of carbon found in citric acid?

_____

11. Identifying What is the difference between the percentage of hydrogen in citric acid and the percentage of hydrogen in table sugar?

_____

_____

12. Comparing Citric acid and table sugar are compounds. How can you tell from the pie graphs that citric acid and table sugar are not the same compound? Explain your reasoning.

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13. Comparing What is the difference between an element and a compound?

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▌Chapter Review *continued*

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14. Evaluating When nail polish is dissolved in acetone, which substance is the solute, and which is the solvent?

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15. Evaluating Many gold rings are made out of 14-karat gold, which is an alloy of gold, silver, and copper. Is 14-karat gold a pure substance?

_____

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WRITING SKILLS

16. Communicating Concepts On a separate sheet of paper, write an essay that could clearly explain to a third grade student the difference between elements, compounds, and mixtures. Your essay should have a thesis statement and include examples that support your ideas. Finally, make sure that your essay has a conclusion sentence.

▍Chapter Review *continued*

19. Applying Concepts Explain two properties of mixtures using a fruit salad as an example of a mixture.

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20. Forming Hypotheses Temperature affects the solubility of substances. Gases become less soluble as temperature increases. To keep the "fizz" in carbonated beverages after they have been opened, should you store them in a refrigerator or in a cabinet? Explain.

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21. Analyzing Ideas Both carbon monoxide and carbon dioxide are made of carbon and oxygen, but they are not the same compound. Explain why these compounds differ from each other.

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❚ Chapter Review *continued*

22. Applying Concepts When hydrogen and oxygen react to form water, what happens to the atoms of the hydrogen and oxygen?

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INTERPRETING GRAPHICS

Dr. Sol Vent did an experiment to find the solubility of a compound. The data below were collected using 100 mL samples of water.

Use the table below to answer the next two questions.

Temperature (°C)	10	25	40	60	95
Dissolved solute (g)	150	70	34	25	15

23. Forming Hypotheses Use a computer or graph paper to construct a graph of Dr. Vent's results. Examine the graph. To increase the solubility, would you increase or decrease the temperature? Explain.

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24. Predicting Consequences If 200 mL samples of water were used instead of 100 mL samples, how many grams of the compound would dissolve at 40°C?

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_____

MATH SKILLS

25. Making Calculations What is the concentration of a solution prepared by dissolving 50 g of salt in 200 mL of water? Show your work below.

26. Making Calculations How many grams of sugar must be dissolved in 150 mL of water to make a solution that has a concentration of 0.6 g/mL? Show your work below.

CHALLENGE

27. Applying Concepts Describe a procedure that will separate a mixture of salt, finely ground pepper, and pebbles. Carefully consider the order in which you will perform each step. Explain why you chose the steps you did for each substance. How does knowing the properties of matter help you separate the substances in mixtures?

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