Name _____ Class _____ Date _____

Skills Worksheet

Vocabulary and Section Summary A

Arranging the Elements

VOCABULARY

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

1. periodic

2. period

3. group

4. periodic law

SECTION SUMMARY

Read the following section summary.

- Mendeleev developed the first periodic table by listing the elements in order of increasing atomic mass. He used his table to predict that elements with certain properties would be discovered later.
- Properties of elements repeat in a regular, or periodic, pattern.
- Moseley rearranged the elements in order of increasing atomic number.
- Elements in the periodic table are classified as metals, nonmetals, and metalloids.
- Each element has a chemical symbol that identifies elements that make up compounds.
- A horizontal row of elements is called a period. Physical and chemical properties of elements change across each period.
- A vertical column of elements is called a group or family. Elements in a group usually have similar properties.
- The periodic law states that the repeating chemical and physical properties of elements relate to and depend on elements' atomic numbers.

Name _____ Class _____ Date _____

Skills Worksheet

Vocabulary and Section Summary A

Grouping the Elements

VOCABULARY

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

1. alkali metal

2. alkaline-earth metal

3. halogen

4. noble gas

SECTION SUMMARY

Read the following section summary.

- Elements that are classified as alkali metals (Group 1) are the most reactive metals. Atoms of the alkali metals have one electron in their outer level.
- Elements that are classified as alkaline-earth metals (Group 2) are less reactive than the alkali metals are. Atoms of the alkaline-earth metals have two electrons in their outer level.
- Elements that are classified as transition metals (Groups 3–12) include most of the well-known metals and the lanthanides and actinides.
- Groups 13–16 contain the metalloids and some metals and nonmetals.
- Halogens (Group 17) are very reactive nonmetals. Atoms of the halogens have seven electrons in their outer level.
- Noble gases (Group 18) are unreactive nonmetals. Atoms of the noble gases have a full set of electrons in their outer level.
- Hydrogen is set off by itself in the periodic table. Its properties do not match the properties of any one group.

Name _____ Class _____ Date _____

Skills Worksheet

Chapter Review

USING VOCABULARY

_____ **1. Academic Vocabulary** Which of the following words means "an area"?

a. region
b. type
c. structure
d. property

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

group	period	alkali metals
halogens	alkaline-earth metals	noble gases

2. Elements in the same vertical column on the periodic table belong to the same _____.

3. Elements in the same horizontal row on the periodic table belong to the same _____.

4. Elements that are unreactive are called _____.

UNDERSTANDING CONCEPTS

Multiple Choice

_____ **5.** Mendeleev's periodic table was useful because it

a. had elements arranged by atomic number.
b. had no empty spaces.
c. showed the atomic number of the elements.
d. allowed for the prediction of the properties of missing elements.

_____ **6.** An element that is very reactive is most likely a member of the

a. noble gases.
b. alkali metals.
c. transition metals.
d. actinides.

_____ **7.** Which of the following items is NOT found on the periodic table?

a. the atomic number of each element
b. the name of each element
c. the date that each element was discovered
d. the atomic mass of each element

_____ **8.** Which of the following statements about elements is true?

a. Every element occurs naturally.
b. All elements are found in their uncombined form in nature.
c. Each element has a unique atomic number.
d. All of the elements exist in approximately equal quantities.

_____ **9.** Which of the following statements about the periodic table is false?

a. There are more metals than nonmetals on the periodic table.

b. Atoms of elements in the same group have the same number of electrons in their outer level.

c. The elements at the far left of the periodic table are nonmetals.

d. Elements are arranged by increasing atomic number.

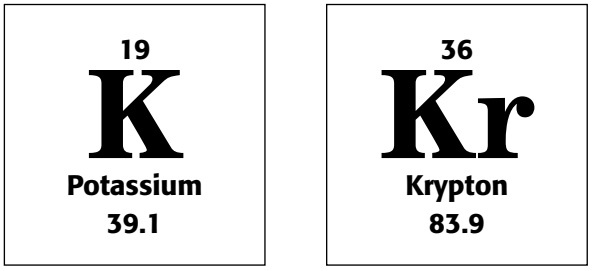
Short Answer

10. Comparing How was Moseley's basis for arranging the elements different from Mendeleev's?

11. Describing What is the periodic law?

INTERPRETING GRAPHICS

Use the images below from the periodic table to answer the next three questions.



12. Identifying What is the atomic number of each of these elements?

13. Comparing An atom of which element has the most protons in its nucleus?

14. Classifying To which region and which group does each of these elements belong?

WRITING SKILLS

15. Communicating Concepts Write an essay that clearly explains how elements are organized on the periodic table. Your essay should have a thesis statement and include examples that support your ideas. Finally, make sure that your essay has a conclusion sentence.

CRITICAL THINKING

16. Concept Mapping Use the following terms to create a concept map: *periodic table*, *elements*, *groups*, *periods*, *metals*, *nonmetals*, and *metalloids*.

17. Analyzing Methods Why was Mendeleev unable to make any predictions about the noble-gas elements?

18. Analyzing Relationships Suppose that a certain unidentified element is a metal. Based on that information alone, to which two groups of the periodic table could it NOT belong? To which period of the periodic table could it NOT belong?

19. Making Inferences Could a new element be discovered that would be placed in between two known elements on the periodic table? Explain.

20. Applying Concepts Identify each element described below.

_____ **a.** This metal is very reactive, has properties similar to those of magnesium, and is in the same period as bromine.

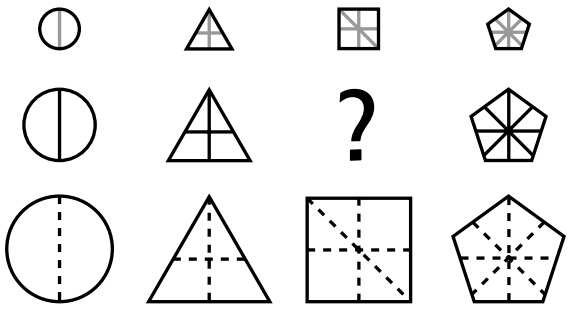
_____ **b.** This nonmetal is in the same group as lead.

_____ **c.** This metal is the most reactive metal in its period. It cannot be found uncombined in nature. Each atom of the element contains 19 protons.

21. Making Comparisons Identify something from everyday life that is periodic, and explain the way in which it is periodic. How is the way in which it is periodic similar to the periodic table, and how is it different?

INTERPRETING GRAPHICS

Use the diagram below to answer the next question.

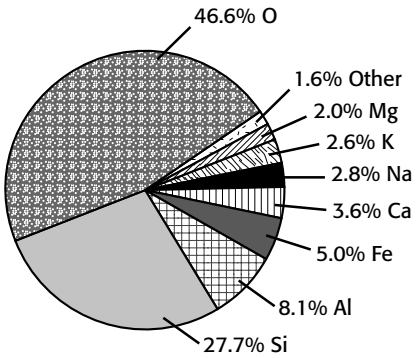


22. Identifying Relationships Predict the missing image, and draw it. Identify which properties are periodic and which properties are shared within a group.

MATH SKILLS

Interpreting Graphics

Use the chart below of the percentages of elements in Earth's crust to answer the next two questions.



23. Analyzing Data Excluding the "Other" category, what percentage of elements in Earth's crust can be classified as metals? Show your work below.

24. Analyzing Data Excluding the "Other" category, what percentage of elements in Earth's crust are alkaline-earth metals? Show your work below.

CHALLENGE

25. Analyzing Relationships Halogens tend to form compounds with alkali metals. Using what you have learned about the reactivities of halogens and alkali metals, suggest a reason for this fact.