

Review Key Ideas and Vocabulary

- Which substance was not one of the Greek elements?
 - air
 - water
 - wood
 - earth
- Which element is not correctly matched with its symbol?
 - oxygen O
 - beryllium Be
 - nitrogen Ni
 - sodium Na
- Which of the following elements is represented by the symbol "S"?
 - silver
 - sulfur
 - silicon
 - sodium
- Which of the following is a characteristic of non-metals?
 - low lustre
 - malleable
 - very ductile
 - high electrical conductivity
- Which scientist is credited with the invention of the Periodic Table?
 - A Lavoisier
 - J.J. Berzelius
 - D.I. Mendeleev
 - Joseph Priestley
- List five elements named for geographical locations and give the names of the locations.
- Match each symbol with the metal it represents.

Symbol	Element
(a) Rn	iodine
(b) Si	potassium
(c) Cd	calcium
(d) P	silver
(e) K	iron
(f) Fe	phosphorus
(g) I	silicon
(h) Ca	radium
(i) Ra	cadmium
(j) Ag	radon

- Identify each of the following statements as true (T) or false (F). Correct the false statements to make them true.
 - The early study of natural substances was called alchemy.
 - The main goal of alchemists was to share their ideas.
 - Elements are made of compounds.
 - Mendeleev organized elements by properties.
 - Elements in the same period have the same properties.
 - Metals are dull and poor conductors of electricity.
- Explain the difference between a period and a group in the Periodic Table.
- A new element has been discovered. All you know at this point is that it is a metal. Based on this information, predict the following:
 - its state at room temperature
 - whether it will be shiny or dull
 - whether it will be brittle or malleable
 - whether it will conduct electricity or not
- A new element has been discovered that is solid, brittle, and shiny, and it conducts electricity. To which group of elements does it belong? Explain your answer.
- Which group of elements—metals, non-metals, or metalloids—is used to create the semiconductors needed by cell phones and computers?
- Name an unknown element that Mendeleev predicted would be discovered, based on his understanding of the properties of groups of elements.
- What happened when the symbols and language of chemistry were developed and shared?

Use What You've Learned

- Aspartame, the sugar substitute in diet pop, has the formula $C_{14}H_{18}N_2O_5$. Which elements are contained in aspartame, and in what proportions? The formula for sugar (sucrose) is $C_{12}H_{22}O_{11}$. What are the elements in sugar and their proportions?

16. The information in Table 1 has been scrambled. Draw a similar table in your notebook, but place the matching formulas, elements, and proportions in the correct rows.

Formula	Element	Proportion
KF	sodium and sulfur	1 to 1
Al ₂ S ₃	potassium and fluorine	1 to 2
CaCl ₂	calcium and oxygen	2 to 1
Na ₂ S	aluminum and sulfur	1 to 1
CaO	calcium and chlorine	2 to 3

17. Why do think the noble gases were the last family to be discovered?
18. Mercury is the only metal that is a liquid at room temperature. What properties do you think mercury has that make it a metal?
19. Which heavenly bodies were the following elements named after: mercury, uranium, neptunium, plutonium, tellurium, selenium, palladium, and cerium? You may need to do some research for some.
20. A nail head in a seat in a sauna feels very hot. The wood of the seat feels only warm. Since they are in the same sauna at the same temperature, what causes the difference?
21. Imagine that you have a collection of stamps from around the world. Some of the stamps are very old, dating back to almost the first stamps of 1840. You want to display the stamps so that people can appreciate both how old the stamps are and where they are from. Based on your understanding of the Periodic Table, explain how you might organize the collection.

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23. Many elements are mined to make them available for use. Where might we have to look for these elements if we can no longer find them through conventional mining?
24. Why do you think properties such as colour and taste were not used to arrange elements in the first periodic table?
25. Kryptonite is the green substance harmful to the fictional character Superman. Research the properties of krypton, and decide if the two substances are likely the same.

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26. The Periodic Table that we use today has a very recognizable form, but it is only one of the forms that have been created. Use the Internet to find alternative forms. Research one and write a report, create a poster, or do a PowerPoint presentation to share your chosen form.
27. Elements in the same group have similar properties. Describe two examples in everyday life where similar substances could be substituted for each other. What other factors would you consider before making the substitution?

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Reflect on Your Learning

28. Berzelius's symbols and Mendeleev's Periodic Table are testaments to the power of grouping and classification. Make a table to show the important points in Chapter 6. Does organizing information in this way help you understand or remember the information better?

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Think Critically

The beginning of modern chemistry was an exciting time. Research one of the scientists mentioned in this chapter, and write a one-page report about the contributions he made to the understanding of chemistry.

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