Which of these is a compound?

A. iron **C.** carbon dioxide
B. oxygen **D.** hydrogen

14. An element is made up of how many kinds of atoms?

F. none **H.** two
G. one **J.** two or more

15. MAIN IDEA AND DETAILS Which always happens during a chemical change?

A. Matter disappears.
B. A smell is produced.
C. A gas is formed.
D. A new substance is produced.

16. COMPARE AND CONTRAST How are physical properties and chemical properties similar?

F. They both describe how one substance reacts with another.
G. They both describe a substance.
H. They both describe the size of a substance.
J. They both describe a substance by itself.

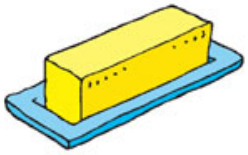
Inquiry Skills

17. You're watching a chemist work. She mixes a green powder with a blue liquid and then heats the mixture. A yellow gas rises out of the beaker. When she is done, all that remains in the beaker is a crumbly orange solid. Did a chemical reaction take place? Explain your **conclusion**.

18. Next, the chemist places a whitish solid in a beaker and heats it. Before long, the solid has turned into a clear liquid. **Hypothesize** what might happen if she continues to heat the beaker.

Critical Thinking

19. Can butter have a change of state? Why do you think this?



20. Suppose you leave a metal hand tool in a garden for a few weeks. Your area gets rain several times. When you finally pick up the tool, you see orange-brown spots on it. What are the spots? Explain what caused the orange-brown spots on the tool.

The Big Idea

Inquiry Skills (5 pts. each)

17. Yes; a yellow gas was given off when heated, and the mixture in the beaker changed colors.

18. Possible answer: The liquid will turn into a gas.

Critical Thinking (5 pts. each)

19. Yes; when it is heated, it melts

20. rust; Rusting is a chemical change that occurs in the presence of water when iron in the metal tool reacts with oxygen.

Chapter Test

See ***Assessment Guide*** pages AG 87–92 for a Chapter Test and Performance Task, with Long Option rubric. Assessment options appear on page 488H.

Short Option Performance Assessment

Task

Reaction

Have students predict and test what will happen when baking soda and vinegar mix. Students will use a narrow-necked jar with a balloon as a lid for the mixing container. Students will record their observations. Remind them to explain what happened and to draw a conclusion about the type of reaction that occurred.

Rubric

Preparation Provide a narrow-necked bottle with a half-inch of vinegar in the bottom, a box of baking soda with a spoon, and a balloon.

Scoring Rubric—Performance Indicators

_____ Predicts that the baking soda will dissolve and/or a gas will be produced.

_____ Adds baking soda to the jar. Puts a balloon over the mouth to see if gas is produced.

_____ Explains that the balloon inflates because the vinegar and baking soda react chemically to produce a gas.

_____ Concludes that a chemical reaction takes place between the vinegar and the baking soda and justifies that conclusion.

Observations and Rubric Scores

3 2 1 0