16. Which has mass and takes up space?
F. height H. volume
G. matter J. weight

Inquiry Skills

17. **Compare** the arrangement of particles in a solid with the arrangement of particles in a gas.

18. Two boxes are the same size and have the same density. What can you **infer** about their masses?

Critical Thinking

19. You have a red box and a black box that are exactly the same size. The red box is heavier than the black one. What does this tell you about the physical properties of the boxes?

20. The air around us is a mixture of nitrogen, oxygen, carbon dioxide, and other gases. This morning, the air outside looked like Picture A to the right. Right now, the air outside looks like Picture B. Use the terms *solution* and *suspension* to describe the air this morning and the air right now. Explain how air can be a mixture, a solution, and a suspension.

The Big Idea

Picture A



Picture B



Inquiry Skills (5 pts. each)

17. Solid particles are in a regular pattern, located very close to each other, and vibrate in place. Gas particles have no pattern, are far apart, and move quickly.

18. Their masses are identical.

Critical Thinking (5 pts. each)

19. The boxes have the same volume, but the red box has more matter in it, giving it more mass and making it heavier. The matter in the red box has a greater density than the matter in the black box.

20. The air this morning was a suspension because droplets of water were suspended in a gas. The air right now is a solution because the particles are evenly mixed and no particles are suspended. Air is a mixture because it contains several gases that can be separated. A solution and a suspension are both mixtures. When air has particles suspended in it, it's a suspension. When no particles are suspended, it's a solution.

Chapter Test

See ***Assessment Guide*** pages AG 81–86 for a Chapter Test and Performance Task, with Long Option rubric. Assessment options appear on page 452H.

Short Option Performance Assessment

Task

Finding Density

Have students find the density of an object, such as a book, wooden block, or box, and explain how they did it. They will need to find the volume and mass of the object and then divide the mass by the volume. If necessary, have students take turns using a balance out of sight of their classmates.

Rubric

Preparation Provide each student with a square or rectangular object, a metric ruler, and a pan balance.

Scoring Rubric—Performance Indicators

_____ Accurately finds the volume of the object.

_____ Uses the balance to find the mass of the object.

_____ Divides the mass by the volume to find the density.

_____ Clearly communicates the process followed and the results.

Observations and Rubric Scores

3 2 1 0