13. Which shows the wavelength of the wave?
**A.** A **C.** C
**B.** B **D.** D

14. **COMPARE AND CONTRAST** One bell produces sound waves with a greater amplitude than those of another bell. How do the sounds of the two bells differ?
**F.** The first bell sounds higher.
**G.** The first bell sounds lower.
**H.** The first bell is louder.
**J.** The first bell is softer.

15. What unit is most often used to measure the intensity of a sound?
**A.** bel **C.** decibel
**B.** centimeter **D.** meter

16. **MAIN IDEA AND DETAILS** Where are sound waves changed into electrical signals that travel to your brain?
**F.** the eardrum **H.** the stirrup
**G.** the hammer **J.** the cochlea

## Inquiry Skills



17. Ronald is taking out the trash. He drops a trash can lid, and it makes a huge crash. A second later, he hears an echo of that crash. What can you **infer** about Ronald's surroundings? Explain.

18. Janel is looking at a musical instrument she's never seen before. It has five strings. The thickest string is on the left, and the strings get thinner to the right. **Predict** which string will produce the lowest note. Explain your **prediction**.

## Critical Thinking

The Big Idea

19. Imagine that you want to give a friend a chirping toy bird as a gift. Describe how you will wrap the toy so that the sound can't be heard until the gift is opened. Tell what happens to the sound when you wrap the toy that way.

20. Dr. Jeffers places an oscilloscope and a microphone inside a vacuum chamber. He then removes all the air from the chamber. Outside the chamber is a CD player. Dr. Jeffers plays a recording of a single, pure note—a G. What should appear on the screen of the oscilloscope? Explain. Inside the vacuum chamber is another CD player. Using a remote control, Dr. Jeffers plays a recording of another note—an A. Now what should appear on the screen of the oscilloscope? Explain.



## Inquiry Skills (5 pts. each)

17. Somewhere near Ronald is a smooth, flat surface, such as a tall building or mountain side, that reflects the sound waves.

18. The string on the left; the thickest string would vibrate the slowest and therefore make the lowest sound.

## Critical Thinking (5 pts. each)

19. Possible answer: The toy could be sandwiched between two pillows inside a box. The pillows would absorb the sound, so that it couldn't be heard.

20. Nothing; with no air in the chamber, there's no way for the sound waves to travel from the CD player to the oscilloscope. Nothing; even though the second CD player is inside the chamber, there's still no air for the sound waves to travel through.

## Chapter Test

See ***Assessment Guide*** pages AG 93–98 for a Chapter Test and Performance Task, with Long Option rubric. Assessment options appear on page 526H.

## Short Option Performance Assessment

### Task

**Sound or Not?**

Have students investigate ways to stop the transmission of sound waves. Students will place a ticking clock in a shoe box and attempt to render the setup soundless. Remind students to clearly state their conclusions.

### Rubric

**Preparation** Provide a ticking clock and a shoe box. Also provide a number of household items, such as empty egg cartons (foam and cardboard), aluminum foil, and newspaper.

**Scoring Rubric—Performance Indicators**

_____ Experiments with different objects as sound insulators.

_____ Manages to muffle the sound from the clock somewhat.

_____ Devises a method to block all or nearly all of the sound from the clock.

_____ Generalizes results to suggest methods of real-world sound dampening.

**Observations and Rubric Scores**

3 2 1 0