

**Chapter Test****Sound and Light**

In the space provided, write the letter of the term or phrase that best completes each statement or best answers each question.

- \_\_\_\_\_ 1. The intensity of a sound describes
  - a. its speed.
  - b. its loudness at a particular distance.
  - c. the distance and medium through which it travels.
  - d. the medium through which it travels.
  
- \_\_\_\_\_ 2. Resonance refers to an effect in which the
  - a. vibration of one object causes another object to vibrate at natural frequencies.
  - b. intensity of a sound decreases over time.
  - c. pitch of a note is compared to a pure tone.
  - d. vibration of a string or column of air causes a standing wave at a natural frequency.
  
- \_\_\_\_\_ 3. The particle model of light explains how light can
  - a. travel through empty space without a medium.
  - b. refract when it passes through a lens.
  - c. be reflected off a mirror.
  - d. diffract when it passes through a normal opening.
  
- \_\_\_\_\_ 4. The amount of energy in a photon of light is proportional to the
  - a. medium through which it travels.
  - b. shape of the light wave it creates.
  - c. speed of the corresponding light wave.
  - d. frequency of the corresponding light wave.
  
- \_\_\_\_\_ 5. When light rays reflect off a rough surface, they
  - a. scatter in many different directions.
  - b. converge toward the normal.
  - c. diverge away from the normal.
  - d. decrease their speed and change their angle.
  
- \_\_\_\_\_ 6. An orange looks orange because it
  - a. reflects orange light and absorbs other colors.
  - b. absorbs orange light and reflects other colors.
  - c. reflects red and yellow light only.
  - d. absorbs red and yellow light only.

# **Chapter Test *continued***

7. When light moves from a material in which its speed is higher to a material in which its speed is lower, it is
  - a. bent toward the normal.
  - b. bent away from the normal.
  - c. reflected off the boundary.
  - d. changed into a virtual image.
8. Light that enters one end of a fiber optic cable reaches the other end by means of
  - a. dispersion.
  - b. magnification.
  - c. repeated intensification.
  - d. total internal reflection.
9. Which structure within the eye is responsible for the largest percentage of refraction of light?
  - a. retina
  - b. cornea
  - c. lens
  - d. iris
10. White light breaks up into different colors when it passes through a prism because of
  - a. differences in wave speed.
  - b. total internal dispersion.
  - c. reflection.
  - d. droplets in the air.

**Read each statement and write in the blank the word or words that best completes the statement.**

11. The greater the \_\_\_\_\_ of a sound wave, the louder the sound.
12. Resonance occurs when the vibration of one object causes another object to vibrate at a(n) \_\_\_\_\_.
13. The three small bones in your middle ear are the \_\_\_\_\_, the \_\_\_\_\_, and the \_\_\_\_\_.
14. In the particle model of light, individual "packets" of light are called \_\_\_\_\_.
15. The energy of light is proportional to the \_\_\_\_\_ of the corresponding \_\_\_\_\_.
16. The theoretical line perpendicular to the surface where a light ray hits a mirror is called the \_\_\_\_\_.
17. In a(n) \_\_\_\_\_ image, light rays really exist at the point where the image appears.

**Chapter Test** *continued*

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**18.** White light actually contains all the visible wavelengths of the \_\_\_\_\_.

**19.** If a light moves from a material in which its speed is lower to one in which its speed is higher, the ray is bent away from the \_\_\_\_\_.

**Read the question, and write your response in the space provided.**

**20.** What does it mean to say that light can be modeled as both a wave and particle? Explain the implications for scientific theory.

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