

Skills Worksheet

Concept Review**Section: Sound**

1. Explain why the speed of sound changes if the temperature of the medium changes.

2. Explain what factors affect the loudness of a sound.

3. Describe how to change the pitch of a note played on a stringed instrument.

4. Determine which of the following has more harmonics in its sound — a tuning fork or a guitar. Explain.

5. Describe how longitudinal waves in the air produce longitudinal waves in the cochlear fluid of the inner ear.

6. Determine the following distances based on the sonar data given. A ship sends a sound pulse downward and receives the reflected sound 2.50 s later. (Hint: Use the formula $d = vt$. Assume the speed of sound in sea water is 1540 m/s.)

a. the total distance traveled by the sound pulse

b. the depth of the water

Skills Worksheet

Concept Review

Section: The Nature of Light

1. Explain what is meant by the “dual nature” of light.

2. Indicate whether the following behaviors of light can best be described in terms of the particle model or the wave model.

_____ **a.** Light can produce interference patterns.

_____ **b.** Light can travel in a vacuum.

_____ **c.** Dim blue light can knock electrons off a metal plate, whereas bright red light cannot.

3. Determine which band of the electromagnetic spectrum has each of the following:

_____ **a.** the longest wavelength

_____ **b.** the highest frequency

_____ **c.** the greatest energy

_____ **d.** the least energy

4. Explain whether the photons emitted by a bright light bulb are more energetic than those emitted by a dim light bulb of the same color. How does the color of the light bulbs determine the amount of energy of the electromagnetic waves?

5. List the regions of the electromagnetic spectrum in order of increasing energy.

6. Describe some uses of X rays and gamma rays in medicine.

