# Chapter 20 – The Energy of Waves
## Directed Reading A

## Section: The Nature of Waves

**1.** What is a wave?

_____

_____

_____

**WAVE ENERGY**

**2.** Why does a wave move toward the shore but the leaf floating on the surface of the water does not?

_____

_____

**3.** A substance through which a wave can travel is called a(n)

_____.

**4.** How is energy transmitted through a medium?

_____

_____

_____

**5.** Define *vibration*.

_____

_____

**6.** Name three types of waves that require a medium.

_____

_____

_____

**7.** Waves that require a medium are called _____.

**8.** List three examples of waves that can transfer energy without going through a medium.

_____

_____

_____

**9.** Waves that do not require a medium but can go through matter are called

_____.

## TYPES OF WAVES

**10.** What are the two main types of waves?

_____

_____

**11.** How does a surface wave form?

_____

_____

**Match the correct description with the correct term. Write the letter in the space provided.**

_____**12.** a part of a longitudinal wave where the particles are crowded together

_____**13.** word that means to be "at right angles"

_____**14.** the highest point of a transverse wave

_____**15.** a part of a longitudinal wave where the particles are spread apart

_____**16.** a wave in which the particles of the medium move perpendicularly to the direction the wave is traveling

_____**17.** the lowest point between each crest of a transverse wave

_____**18.** a wave in which the particles of the medium move back and forth along the path that the wave moves

**a.** transverse wave

**b.** compression

**c.** trough

**d.** perpendicular

**e.** rarefaction

**f.** crest

**g.** longitudinal wave

Skills Worksheet

# Directed Reading A

## Section: Properties of Waves

_____ 1. The height of waves and the distance between crests are examples of
   **a.** wave interactions.
   **b.** media.
   **c.** wave properties.
   **d.** rest positions.

## AMPLITUDE

_____ 2. The amplitude of a wave is related to its
   **a.** speed.
   **b.** frequency.
   **c.** length.
   **d.** height.

_____ 3. The point where particles in a medium stay when there are no disturbances is the
   **a.** rest position.
   **b.** wavelength.
   **c.** amplitude.
   **d.** compression.

**4.** Define *amplitude*.

_____

_____

_____

**5.** A wave with a(n) _____ amplitude carries more energy

than a wave with a(n) _____ amplitude.

## WAVELENGTH

_____ 6. The distance from any point on a wave to an identical point on the next wave is called a
   **a.** crest.
   **b.** wavelength.
   **c.** trough.
   **d.** frequency.

**7.** A wave with a(n) _____ wavelength carries more energy

than a wave with a(n) _____ wavelength.

## FREQUENCY

_____ **8.** The number of waves produced in a given amount of time is known as the wave's
    **a.** hertz.
    **b.** speed.
    **c.** frequency.
    **d.** compression.

_____ **9.** Which of the following units are used to measure frequency?
    **a.** meters
    **b.** hertz
    **c.** decibels
    **d.** watts

_____ **10.** One hertz equals how many waves per second?
    **a.** 1
    **b.** 5
    **c.** 10
    **d.** 100

**11.** If the amplitudes of waves are equal, _____ waves carry

more energy than _____ waves.

## WAVE SPEED

_____ **12.** What is the speed at which a wave travels through a medium called?
    **a.** frequency
    **b.** hertz
    **c.** wavelength
    **d.** wave speed

_____ **13.** If the speed and the wavelength of a particular wave is known, then the wave equation can be used to determine the wave's
    **a.** amplitude.
    **b.** frequency.
    **c.** compression.
    **d.** hertz.

_____ **14.** If a wave is traveling at a certain speed and its frequency is cut in half, what happens to the wavelength?
    **a.** The wavelength is doubled.
    **b.** The wavelength is halved.
    **c.** The wavelength remains the same.
    **d.** The wavelength is inverted.

**15.** Wave speed is equal to _____ multiplied by frequency.

**16.** How is the wave equation used to calculate wave speed written?

_____

Name _____ Class _____ Date _____

# Directed Reading A

## Section: Wave Interactions
### REFLECTION

**1.** Why do planets and the moons shine so brightly if they do not produce light?

_____

_____

**2.** When a wave bounces back after hitting a barrier, _____ occurs.

**3.** A reflected sound wave is called a(n) _____.

**4.** When a wave passes through a substance, the wave is

_____ through that substance.

### REFRACTION

**5.** When a wave bends as it passes from one medium to another at an angle,

_____ occurs.

**6.** What causes a wave to bend and travel in new direction when it moves from one medium to another?

_____

_____

_____

**7.** Why can you see a rainbow when sunlight is refracted through water droplets?

_____

_____

_____

### DIFFRACTION

**8.** Define *diffraction*.

_____

_____

_____