



Directed Reading for
Content Mastery

Section 1 ■ The Nature of Electromagnetic Waves

Section 2 ■ The Electromagnetic Spectrum

Directions: Complete the following sentences using the terms listed below.

particle

energy

force

gamma rays

1. A wave transfers _____ from one place to another.
2. _____ are produced by changes in the nucleus of atoms.
3. An electromagnetic wave is produced by a charged _____ moving up and down.
4. The two parts that make up an electromagnetic wave are magnetic and electric _____ fields.

Directions: Use the terms below to identify the wave classifications indicated on the electromagnetic spectrum.

X rays

ultraviolet waves

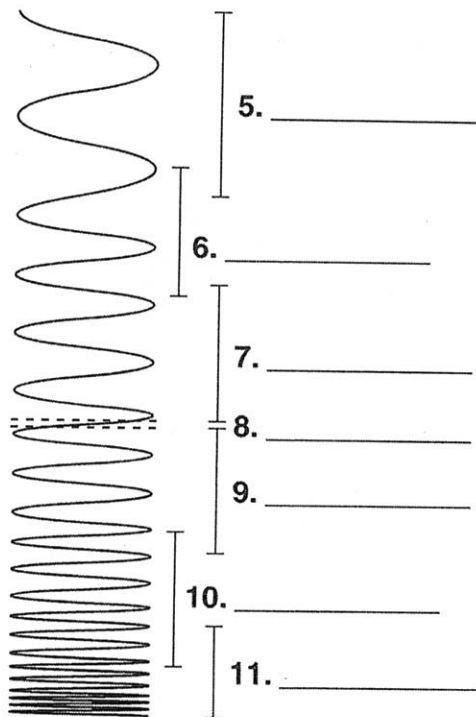
microwaves

radio waves

visible light

infrared waves

gamma rays



**Directed Reading for
Content Mastery****Key Terms****Electromagnetic Waves**

Directions: Match the description in Column I with the term in Column II by writing the correct letter in the space provided.

Column I

- _____ 1. a general term to describe all waves that can travel through empty space
- _____ 2. energy carried by electromagnetic waves
- _____ 3. the range of electromagnetic waves
- _____ 4. waves with the lowest frequency of all electromagnetic waves
- _____ 5. waves given off by almost every object
- _____ 6. waves detectable by human eyes
- _____ 7. waves that cause sunburn
- _____ 8. waves that can penetrate skin and muscle, but can be stopped by lead shields
- _____ 9. waves with the highest frequency and the most penetrating power
- _____ 10. frequencies assigned to radio stations
- _____ 11. a system for locating items on Earth

Column II

- a. radio waves
- b. gamma rays
- c. electromagnetic spectrum
- d. ultraviolet radiation
- e. electromagnetic waves
- f. Global Positioning System
- g. X rays
- h. radiant energy
- i. carrier waves
- j. infrared waves
- k. visible light

Directions: Use terms from Column II above to complete the following sentences.

- 12. _____ are used to send signals from a pager to a base station.
- 13. _____ can be used to map wildfires obscured by smoke.
- 14. _____ enables your body to produce vitamin D.
- 15. _____ is usually given off by sources at high temperatures.



Reinforcement

The Nature of Electromagnetic Waves

Directions: Identify each statement as true or false. Write **T** if the statement is true. If the statement is false, change the italicized term to make the statement correct.

- _____ 1. Waves carry *matter*.
- _____ 2. *Mechanical* waves bring energy from the Sun.
- _____ 3. The speed of light is 1,000,000 km/s.
- _____ 4. The international space station is held in orbit by Earth's *electrical field*.
- _____ 5. One magnet affects another because the magnets are surrounded by magnetic *charges*.

Directions: Correctly complete each sentence by underlining the best of the choices in parentheses.

6. An electromagnetic wave (uses, does not use) matter to transfer energy.
7. The number of waves that pass a certain point in one second is the wave's (wavelength, intensity, frequency).
8. Electromagnetic waves are produced by (moving magnets, moving electric charges, light fields).
9. Mechanical waves (can, can't) transfer energy through empty space.
10. Earth's (gravitational, magnetic) field causes the Moon to orbit Earth.
11. Electromagnetic waves carry (mechanical, potential, radiant) energy.
12. The amount of energy an electromagnetic wave carries is determined by its (frequency, modulation, amplitude).
13. Light from stars other than the Sun takes (hours, years) to reach Earth.

Directions: Answer the following question on the lines provided.

14. How are moving electric charges related to electromagnetic waves?
