Name Key Date

Comprehension
Section 4.3

Use with textbook pages 152–160.

True or false?

Read the statements given below. If the statement is true, write "T" on the line in front of the statement. If it is false, write "F" and rewrite the statement to make it true.

1. True Radiant energy spreads out from its source in all directions.

2. F Electromagnetic radiation includes only visible light waves.
visible and invisible

3. F Microwaves are a type of infrared wave.
radio wave.

4. F X rays have more energy than gamma rays.
less

5. True Radio waves, microwaves, and ultraviolet waves all have longer wavelengths than visible light.

6. True Both X rays and gamma rays have higher frequencies than ultraviolet rays.

7. F Communicating with satellites is an application of gamma rays.
microwaves or radio waves

8. True The Sun radiates both visible energy and invisible energy.

Name Key Date

Assessment
Section 4.3

Use with textbook pages 152–160.

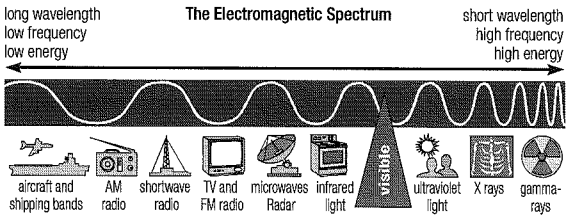
Visible light and the electromagnetic spectrum

Match each Term on the left with the best Descriptor on the right. Each Descriptor may be used only once.

Term	Descriptor
1. E X rays	A. used to heat up left-over pizza
2. A microwaves	B. used to broadcast television
3. D gamma rays	C. used by computers to read CD-ROMS
4. B radio waves	D. used in radiation therapy to kill cancer cells
	E. used by dentists to take a picture of your teeth

Circle the letter of the best answer.

Use the following diagram of the electromagnetic spectrum to answer questions 5 to 10.



5. Which of the following types of radiation has the highest frequency?
   - **A.** visible light
   - **B.** infrared light
   - **C.** AM radio waves
   - **D.** gamma radiation

6. Which of the following is generally associated with radio waves?
   - **A.** visible radiation
   - **B.** high-energy waves
   - **C.** high-frequency waves
   - **D.** long-wavelength waves

7. Which of the following types of radiation gives off the lowest amount of energy?
   - **A.** X rays
   - **B.** visible light
   - **C.** microwaves
   - **D.** gamma rays

8. Which of the following correctly places these electromagnetic waves in order from shortest wavelength to longest wavelength?
   - **A.** visible light, radio waves, ultraviolet light, infrared radiation
   - **B.** radio waves, visible light, infrared radiation, ultraviolet light
   - **C.** ultraviolet light, visible light, infrared radiation, radio waves
   - **D.** ultraviolet light, infrared radiation, radio waves, visible light

9. Which of the following has a higher frequency than visible light?
   - **A.** infrared waves
   - **B.** X rays
   - **C.** microwaves
   - **D.** radio waves

10. How does the frequency of electromagnetic radiation change as wavelength of the radiation decreases?
    - **A.** it increases
    - **B.** it decreases
    - **C.** it stays the same
    - **D.** it increases and then decreases

Name Key Date

Cloze Activity
Section 4.3

Use with textbook pages 152–160.

More than meets the eye

Vocabulary	
~~electromagnetic radiation~~	radiant energy
~~electromagnetic spectrum~~	~~radio waves~~
~~frequency~~	~~ultraviolet rays~~
~~gamma rays~~	visible light
~~infrared waves~~	wavelength
~~microwaves~~	X rays

Use the terms in the vocabulary box to fill in the blanks. Use each term only once.

1. The electromagnetic spectrum represents the different forms of electromagnetic radiation.

2. Light is classified as visible light because electrical and magnetic fields vibrate in a light wave.

3. Electromagnetic radiation is energy that travels by radiation. An example of this is light.

4. Heat radiation, also known as infrared waves, cannot be seen by your eyes but can be felt by your skin.

5. Microwaves are one type of radio waves.

6. Microwaves can be used to communicate with satellites.

7. Because gamma rays have the highest energy of all electromagnetic radiation, they are the most damaging to human tissue.

8. Compared to all other types of electromagnetic radiation, radio waves have the lowest frequency.

9. An overexposure to ultraviolet ~~waves~~ rays can result in sunburns and skin cancer.