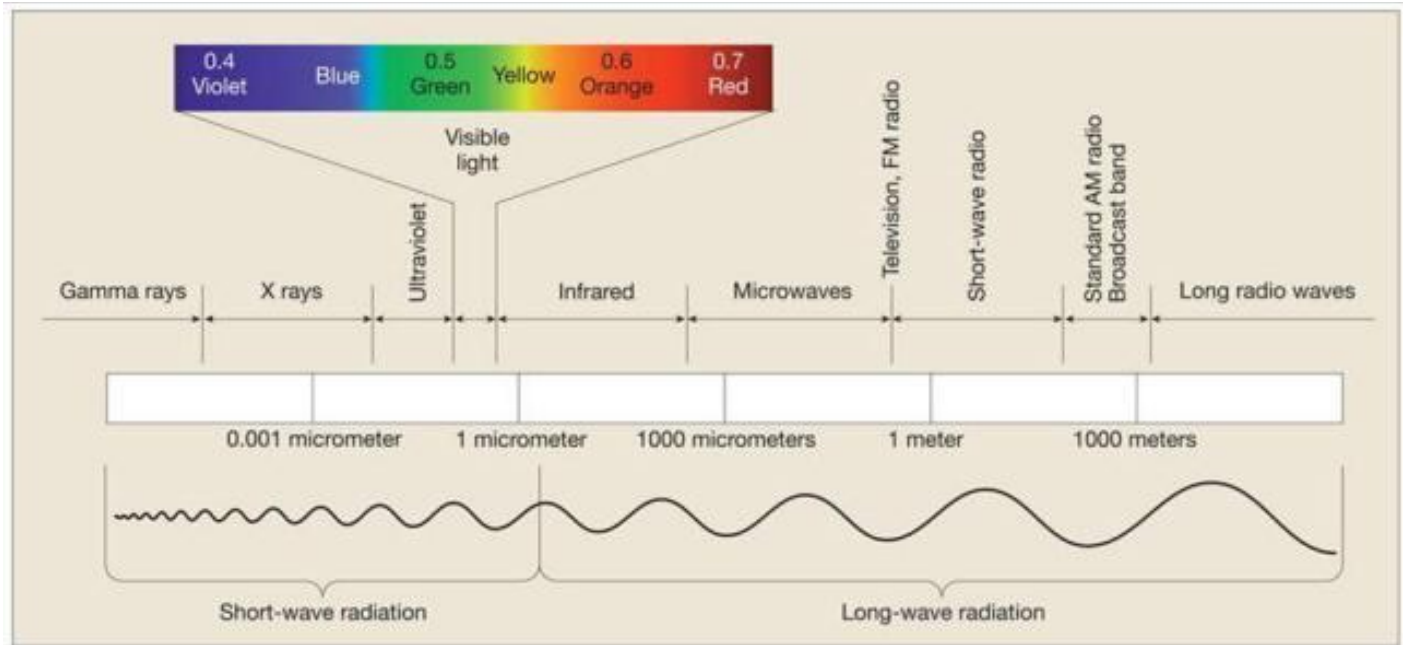


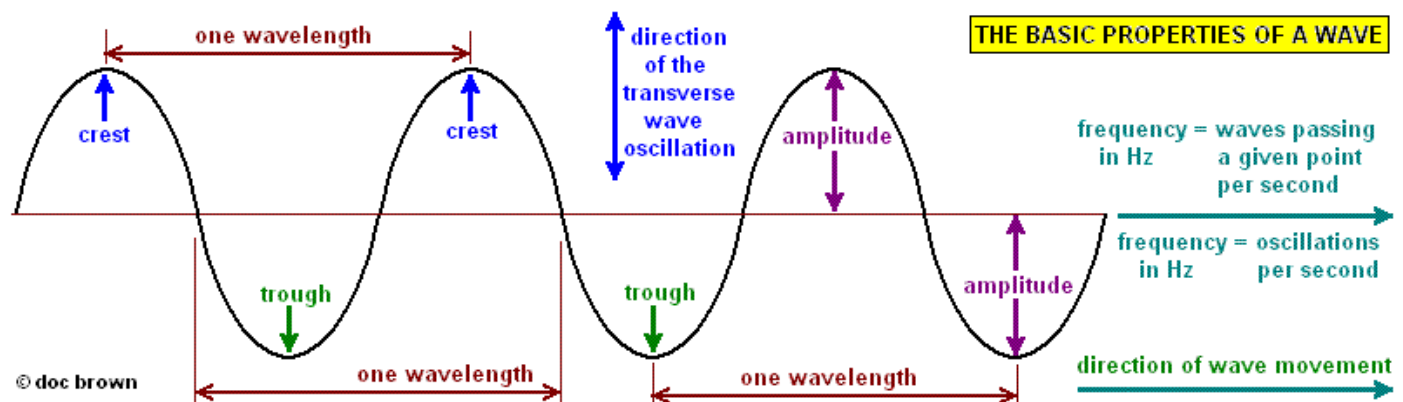
NAME: \_\_\_\_\_

PERIOD: \_\_\_\_\_ DATE: \_\_\_\_\_



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←	decreasing	wavelength	increasing →
←	increasing	frequency	decreasing →
←	increasing	energy	decreasing →



First watch the video on the electromagnetic spectrum using the link below.

<https://www.youtube.com/watch?v=cfXzwh3KadE>

Use the illustrations above as a resource.

1. In each of the following pairs, circle the form of radiation with the LONGER WAVELENGTH:

- red light or blue light
- microwaves or radio waves
- infrared radiation or red light
- gamma rays or UV radiation

2. In each of the following pairs, circle the form of radiation with the GREATER FREQUENCY:

- a. yellow light or green light
- b. x-rays or gamma rays
- c. UV radiation or violet light
- d. AM radio waves or FM radio waves

3. In each of the following pairs, circle the form of radiation with the LOWER ENERGY (energy is directly related to frequency):

- a. red light or blue light
- b. microwaves or radio waves
- c. infrared radiation or red light
- d. gamma rays or UV radiation
- e. yellow light or green light
- f. x-rays or gamma rays
- g. UV radiation or violet light
- h. AM radio or FM radio waves

Use the link below to access the information needed to complete the following section.

<http://www.darvill.clara.net/emag/index.htm>

Match each kind of wave with one item from column one and one item from column two.

**COLUMN 1**

A. picked up by night vision goggles \_\_\_\_\_

B. goes through most matter except bone and lead \_\_\_\_\_

C. highest energy and therefore most destructive \_\_\_\_\_

D. promotes vitamin D production and can cause skin cancer \_\_\_\_\_

E. longest wavelength and lowest frequency \_\_\_\_\_

F. used to transmit cell phone and Wi-Fi signals \_\_\_\_\_

**WAVE TYPE**

RADIO \_\_\_\_\_

MICROWAVE \_\_\_\_\_

INFRARED \_\_\_\_\_

VISIBLE \_\_\_\_\_

ULTRAVIOLET \_\_\_\_\_

X-RAY \_\_\_\_\_

**COLUMN 2**

H. used in airport security checks

I. used to kill bacteria on medical instruments & food

J. ROY G BV

K. used to kill cancer cells

L. used in television transmissions

M. used to analyze weather conditions & measure the speed of moving objects

G. wavelengths and frequencies that can be seen by the human eye

\_\_\_\_\_ GAMMA \_\_\_\_\_

N. radiant heat rays

**Circle the correct answer from the text below each question:**

1. Gamma rays travel faster than visible light. true false
2. All electromagnetic waves travel at the same speed in a vacuum. true false
3. The speed of light in a vacuum is...  
31 m/s 300 m/s 300,000,000 m/s infinite
4. White light is a mixture of colors that can be split into the visible spectrum by a ...  
rainbow prison migraine prism
5. These waves have the longest wavelength and are used to carry signals for radar, TV and radio  
radio waves ultraviolet microwave infrared
6. These rays are absorbed by bones and teeth but pass through flesh  
radio waves x-rays visible light infrared
7. These waves are used to cook food (they are absorbed by water molecules in the food)  
gamma rays x-rays micro-waves ultraviolet
8. Our eyes are able to see waves in this part of the electromagnetic spectrum  
ultraviolet radio visible infrared
9. Any warm object emits this wave. Night vision cameras are able to detect this type of wave.  
gamma rays visible light microwaves infrared
10. These rays are emitted by the sun (and other white hot objects). Over-exposure to these rays can burn the skin and cause skin cancer.  
gamma rays ultraviolet microwaves infrared
11. These rays have the shortest wavelength of all. They are emitted by some radioactive substances. They are often used in radiotherapy to kill cancer cells.  
gamma rays ultraviolet infrared microwaves
12. Waves with a high frequency have a \_\_\_\_\_ wavelength. long short
13. The longer the wavelength the \_\_\_\_\_ the frequency. lower higher
14. Electromagnetic waves are \_\_\_\_\_ waves.  
happy noisy transverse longitudinal
15. In \_\_\_\_\_ waves the vibrations are at right angles to the direction of the wave.  
longitudinal transverse
16. In \_\_\_\_\_ waves the vibrations are in the same direction as the direction of the wave.  
longitudinal transverse
17. Electromagnetic waves can travel through a vacuum. true false

18. Sound waves are part of the electromagnetic spectrum. true false

19. Light waves, water waves, microwaves and the 'Mexican wave' are all examples of \_\_\_\_\_ waves. electromagnetic transverse longitudinal

20. The greater the energy, the (higher or lower) the frequency and the (shorter or longer) the wavelength. It follows that short wavelengths are (more or less) energetic than long wavelengths.