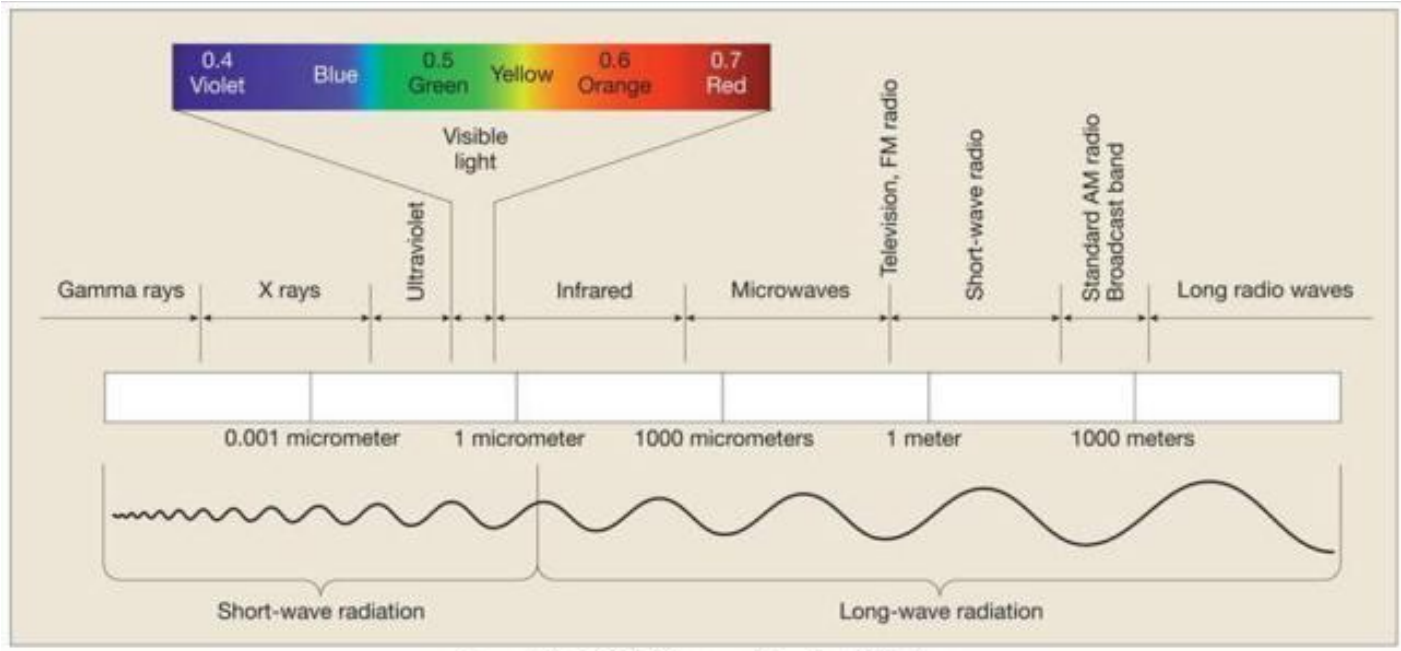
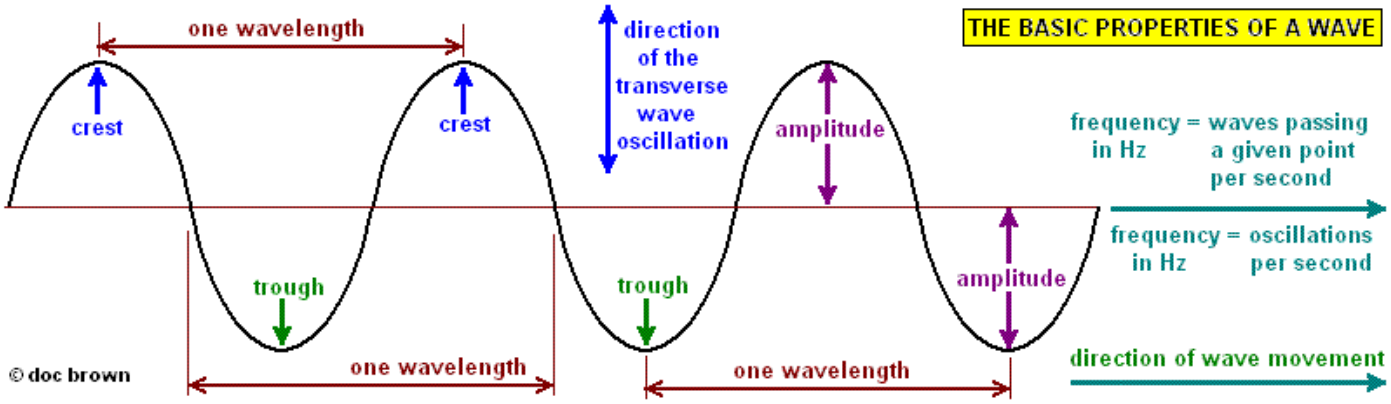
NAME: _____ **PERIOD:** ___**DATE:** _____



← 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:
   a. red light or blue light
   b. microwaves or radio waves
   c. infrared radiation or red light
   d. 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		**WAVE TYPE**		**COLUMN 2**
A. picked up by night vision goggles	_____	RADIO	_____	**H**. used in airport security checks
B. goes through most matter except bone and lead	_____	MICROWAVE	__ ___	**I**. used to kill bacteria on medical instruments & food
C. highest energy and therefore most destructive	_____	INFRARED	_____	**J**. ROY G BV
D. promotes vitamin D production and can cause skin cancer	_____	VISIBLE	_____	**K**. used to kill cancer cells
E. longest wavelength and lowest frequency	_____	ULTRAVIOLET	_____	**L**. used in television transmissions
F. used to transmit cell phone and Wi-Fi signals	_____	X-RAY	_____	**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.