

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Class: \_\_\_\_\_

## **ELECTROMAGNETIC WAVES WEBQUEST**

Use the following web address to answer the questions below:

[http://imagine.gsfc.nasa.gov/docs/science/know\\_l1/emspectrum.html](http://imagine.gsfc.nasa.gov/docs/science/know_l1/emspectrum.html)

- 1) What is radiation?
- 2) Where in your house do you find visible light waves?
- 3) Where in your house do you find radio waves?
- 4) List 2 different places radio waves are used.
- 5) Other than microwave ovens, where are microwaves used?
- 6) Why do we often think of infrared waves as heat?
- 7) What type of wave is the part of the spectrum that we see?
- 8) What type of waves does the Sun emit?
- 9) What type of waves do doctors use to take pictures of your bones?
- 10) What type of wave is radioactive? Where are these made?
- 11) What are radio waves, visible light rays, and x-rays all a part of?
- 12) What is it that waves are made up of?
- 13) How fast do waves travel?
- 14) Photons in different waves are different. How?
- 15) What 3 ways do we describe waves and what are the units that go with these terms?

Use the address below to answer the next questions:

<http://science.hq.nasa.gov/kids/imagers/ems/ems.html>

16) What colors make up the visible light portion of the electromagnetic spectrum?

a. What is the acronym for these colors?

17) Which color has the longest wavelength?

18) Which color has the shortest wavelength?

19) Which color has the highest frequency?

20) Which color has the lowest frequency?

21) How is a wavelength measured?

CLICK ON "What are waves?"

22) What are 2 examples of waves we can see?

a. We discussed waves that we can see yesterday in class. These waves are NOT electromagnetic waves they are \_\_\_\_\_ waves and unlike electromagnetic waves they require a \_\_\_\_\_ which is the matter through which a wave travels.

23) Why is there no sound in space?

24) How are electromagnetic waves different from sound waves?

25) CLICK ON "What are electromagnetic waves?"

26) When are electromagnetic waves formed?

27) In an electromagnetic wave the magnetic field travels \_\_\_\_\_ to the electric field.

CLICK ON "Different kinds of electromagnetic waves have different wavelengths."

28) Waves in the electromagnetic spectrum vary in size from very long \_\_\_\_\_ waves the size of \_\_\_\_\_, to very short \_\_\_\_\_ waves smaller than the size of the \_\_\_\_\_.

CLICK ON the "RADIO WAVES" link at the bottom of the page...

29) For each type of wave, list 3 facts that make it different from the rest:

- a. Radio
  
- b. Microwaves
  
- c. Infrared
  
- d. Visible Light
  
- e. Ultraviolet
  
- f. X-rays
  
- g. Gamma Rays

30) Which category of waves has the longest wavelength?

**You will use the next website to answer the following questions:**

[http://amazing-space.stsci.edu/resources/explorations/light/CatchWaves\\_activation-frames.html](http://amazing-space.stsci.edu/resources/explorations/light/CatchWaves_activation-frames.html)

31) Activate the tab and tell me what you see.

CLICK ON “Light Facts” in the upper right-hand corner of the screen.

32) Who noticed the visible light spectrum first?

33) What causes the waves in a rainbow to bend?

Close the “Light Facts” pop-up window and hit NEXT.

34) What do all waves have in common?

35) What is one way we can give water energy?

36) How do we give energy to the strings of a guitar?

CLICK “Next”

Check out the different waves, click on them and read the sentence below which describes it!

You will now need the following web address:

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

Use the links on the top of the page:

Radio waves

37) How are radio waves made?

38) What are some dangers of radio waves?

Microwaves

39) What type of other wave is a microwave similar to?

40) How do microwaves make food hot?

41) What is one common use of microwaves (besides microwaving food!)?

42) What is a danger of microwaves?

Infrared

43) Do humans give off infrared waves?

44) What is a danger of infrared waves?

Visible Light

45) What is a danger of visible light rays? What can it damage?

Ultraviolet

46) What is a danger of UV rays?

47) Do all sunglasses protect your eyes from UV rays?

X-rays

48) What can over-dosage of x-rays cause?

Gamma Rays

49) How do you stop gamma rays?

50) Who is most vulnerable to its dangerous effects?

*You are all done!! Good job!! Try the quiz on this website and see how well you paid attention!!*