

WebQuest Activity: Electromagnetic Spectrum

Name: _____ Date: _____

Introduction: The electromagnetic spectrum is a way of labeling differing wavelengths of light. The energy produced by these waves depends directly on the wavelength. Some of these waves are extremely harmful, some we can feel, and some we can see. Below is a chart of electromagnetic energy and its various forms.

Cosmic Rays	Background radiation; particles of enormous energy given off by stars.
Gamma Rays	Deadly high energy given out by the stars and in nuclear reactions..
X-Rays	High energy used in X-ray equipment.
Ultraviolet Rays	Invisible energy waves in sunlight, which cause skin to tan and can lead to skin cancer.
Visible Light	Basic colors of light, emitted by the sun and visible to the human eye. ROYGBIV.
Infrared Rays	Rays of heat energy. Various organisms, such as bees, use them to see.
Radio Waves	Microwaves; TV; radio (FM, AM) energy

Complete the questions below:

http://imagine.gsfc.nasa.gov/docs/science/know_11/emspectrum.html

In your web browser, type in the address above and answer the following questions:

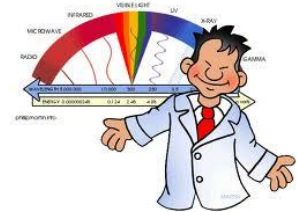
1.What is the electromagnetic spectrum?

2.What is radiation?

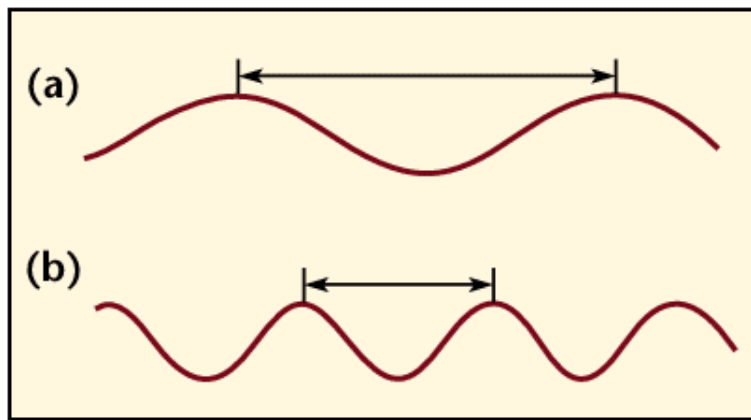
3.While at the website <http://imagine.gsfc.nasa.gov/docs/dictionary.html>, roll the mouse over each of the following words and write what comes up in the box to describe each.

- a.visible light
- b.microwaves
- c.gamma-rays
- d.infrared
- e.ultraviolet light
- f.X-rays
- g.radio waves

4.What is the order of the electromagnetic spectrum from highest to lowest energy?



Use the visual below to answer question 5.



(a) Longer wavelength; (b) shorter wavelength

5. Which has more energy, A or B? Explain your reasoning.

6. Define a wavelength.

7. What is a frequency of a wavelength?

8. For visible light (ROYGBIV), which has the shortest wavelength? Which has the longest? Place all the other colors in order based on their wavelength from shortest to longest.

<http://www.lbl.gov/MicroWorlds/ALSTool/EMSpec/EMSpec2.html>

Go to the link above and answer the following questions:

a. What kind of electromagnetic radiation has the shortest wavelength? The longest?



b. What kind of electromagnetic radiation could be used to "see" molecules? A cold virus? Explain your reasoning.

c. Why can't you use visible light to "see" molecules?

d. Some insects, like bees, can see light of shorter wavelengths than humans can see. What kind of radiation do you think a bee sees? Explain your reasoning.