

## Electromagnetic Spectrum Web Quest

**Directions:** Use the following web sites to answer the questions below. Write your answers on a sheet of notebook paper that you will turn in.

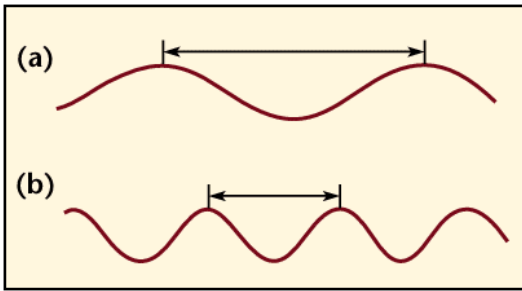
Use [http://imagine.gsfc.nasa.gov/docs/science/know\\_l1/emspectrum.html](http://imagine.gsfc.nasa.gov/docs/science/know_l1/emspectrum.html) for questions 1-4. (Go to "Astronomer's toolbox) and then "Electromagnetic Spectrum. (Read through both the Basic and Advanced pages)

- 1) What do all types of electromagnetic radiation have in common?
- 2) What is different about the different parts of the electromagnetic spectrum?
- 3) Which type of radiation has the most energy? How or where is this radiation formed?
- 4) Raphael refers to a wave by noting its wavelength. Lucinda refers to a wave by noting its frequency. Which student is correct and why?

Go to: <http://science.hq.nasa.gov/kids/imagers/ems/waves3.html> and answer questions 5-10. The links to tour the different types of electromagnetic radiation are at the bottom of the page.

- 5) How does the energy of the different waves of the spectrum vary with frequency? With wavelength?
- 6) What is the frequency range of UV light? Of Infrared light?
- 7) If you use night-vision goggles, what part of the spectrum are you detecting?
- 8) Grayson says that light is the same thing as electromagnetic radiation. Do you agree or disagree with Grayson? Explain your response.
- 9) Do all animals see the same frequencies of "visible" light as humans do?
- 10) Why do astronomers use frequencies other than the visible ones when they are investigating the universe?
- 11) What is the order of the electromagnetic spectrum from **highest to lowest energy**?

Use the visual below to answer question 12.



(a) Longer wavelength; (b) shorter wavelength

12) Which wave in the picture above has more energy, A or B? Explain your reasoning.

13) Define a wavelength.

14) What is a frequency of a wavelength?

Go to: <http://science.hq.nasa.gov/kids/imagers/ems/visible.html> and answer the following questions.

15) What makes each color of visible light different?

16) What makes up white light?

17) For visible light (ROYGBIV), write down all the colors in order from smallest to largest wavelength.

18) What determines the color of an object we see? What happens to all other colors?