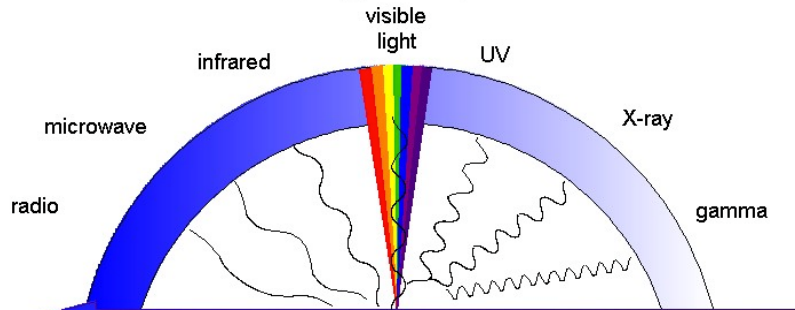


Comparing the Electromagnetic Spectrum Wavelengths

Directions: Copy down the purpose and answer all questions in this inquiry. Remember to include part of the question into your answer.

Background Information:

Electromagnetic Spectrum – The range of electromagnetic waves placed in a certain order.



Purpose: How do the different types of waves in the electromagnetic spectrum compare to each other?

Procedures:

1. Get a sheet of graph paper from the teacher.
2. You will need 7 different colored pencils.
3. Turn the graph paper sideways, so that it is longer than it is higher.
4. Number the intervals on the X-axis by 1's. (From 1 – 35)
5. Title the X axis "relative wavelength"
6. Number the intervals on the Y-axis by 1's. (From 1 – 30)
7. Label the Y-axis "relative wave height"
8. Using one of the colored pencils, plot the points using the Gamma Rays Height (Y-axis) and Relative wavelength (X-axis).
9. Write a Title for this graph at the top of the page.
10. Connect the dots to create a line graph.
11. Continue this process of graphing the different Wave Heights vs. the wavelengths of all the 7 waves from the data table below, use a different colored pencil for each of the 7 different waves.

Analyzing the Data:

1. How long was the Gamma Rays wavelength?
2. How long was the X- Rays wavelength?
3. How long was the Ultraviolet wavelength?
4. How long was the Visible Light wavelength?
5. How long was the Infrared wavelength?
6. How long was the Microwave wavelength?
7. How long was the Radio Waves wavelength?
8. Describe the relationship between wavelength and energy within the electromagnetic spectrum if a radio wave has less energy than a gamma wave.(include both the words energy & wavelength in your answer)
9. Which has more energy Ultraviolet wave or Infrared waves?
10. What portion of the electromagnetic spectrum (graph) has the shortest wavelength?
11. What portion of the electromagnetic spectrum has the longest wavelength?
12. What portion of the electromagnetic spectrum (graph) has most energy?
13. How do you know?
14. What portion of the electromagnetic spectrum has the least amount of energy?
15. How do you know?
16. What has more energy a Visible Light wave or an Infrared wave?
17. What has more energy a x-ray or Microwave?
18. Describe a pattern that you see in this graph.

Go to the website and answer the bottom questions. Of the website:

http://earthguide.ucsd.edu/eoc/special_topics/teach/sp_climate_change/p_emspectrum_interactive.html

Slide the GREEN TRIANGLE to see different amounts of energy and wavelengths

What are the differences between the different types of electromagnetic radiation?

1. Which has a longer wavelength - visible or infrared radiation?
2. Which contains more energy - visible or infrared radiation?
3. Which has a higher frequency - visible or infrared radiation?
4. About how fast do all EM waves move?
5. Do EM waves transmit energy or mass?

Relative Wave-Length	Gamma Rays	X-Rays	Ultra-violet	Visible Light	Infra-Red	Micro-Waves	Radio Waves
1	26	22	18	14	10	6	2
2	29						
3	26	25					
4	29		21				
5	26	22		17			
6	29				13		
7	26	25	18			9	
8	29						5
9	26	22		14			
10	29		21				
11	26	25			10		
12	29						
13	26	22	18	17		6	
14	29						
15	26	25					2
16	29		21		13		
17	26	22		14			
18	29						
19	26	25	18			9	
20	29						
21	26	22		17	10		
22	29		21				5
23	26	25					
24	29						
25	26	22	18	14		6	
26	29				13		
27	26	25					
28	29		21				
29	26	22		17			2
30	29						
31	26	25	18		10	9	
32	29						
33	26	22		14			
34	29		21				
35	26	25					

