Electromagnetic Spectrum Guided Reading

1. How does electromagnetic radiation move through space?

2. How fast do electromagnetic waves travel?

3. Electromagnetic waves behave like a \_\_\_\_\_\_\_\_\_\_\_\_\_ and a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

 Example

4. How does the wavelength of an electromagnetic wave effect the amount of energy it contains?

Fill in the table

|  |  |  |
| --- | --- | --- |
| Electromagnetic Wave | Wavelength range | What do these waves tell us about the solar system? |
| Radio |  |  |
| Infrared |  |  |
| Visible Light |  |  |
| Ultra Violet |  |  |
| X-rays |  |  |
| Gamma waves |  |  |

5. What is spectroscopy?

6. What is photometry?

7. Match each kind of wave with one item from column one and one item from column two.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **COLUMN 1** |  | **WAVE** |  | **COLUMN 2** |
| **A.** used in remote controls for TVs and VCRs | \_\_\_\_\_ | RADIO | \_\_\_\_\_ | **H.** used to find a broken bone or illegal plane carry-on |
| **B.** goes through most matter except bone and lead | \_\_\_\_\_ | MICROWAVE | \_\_\_\_\_ | **I.** used to kill bacteria on food |
| **C.** highest frequency and energy | \_\_\_\_\_ | INFRARED | \_\_\_\_\_ | **J.** ROY G. BV |
| **D.** can cause skin cancer or promote vitamin D production | \_\_\_\_\_ | VISIBLE | \_\_\_\_\_ | **K.** shortest wavelength  |
| **E.** longest wavelength | \_\_\_\_\_ | ULTRAVIOLET | \_\_\_\_\_ | **L.**  most dangerous waves |
| **F.** can be used to increases thermal energy of food in your home. | \_\_\_\_\_ | X-RAY | \_\_\_\_\_ | **M.** TV signals, and used in remote control devices like car alarms and garage door openers |
| **G.** wavelengths and frequencies that can be seen by the human eye | \_\_\_\_\_ | GAMMA | \_\_\_\_\_ | **N.** radiant heat rays |

8. As you go from left to right across the electromagnetic spectrum what happens to the frequency and energy of the waves? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

9. What happens to the speed of light as it enters a different medium? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

10. Which color of the visible light portion of the electromagnetic spectrum has the highest frequency and

 the most energy? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

11. Which color of the visible light portion of the electromagnetic spectrum has the lowest frequency and

 the least energy? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

12. Identify the electromagnetic wave:

 A. Frequency of 3.7x 1012

B. Wavelength of 5.8x 10-8

C. Frequency of 9.2x 104

D. Wavelength of 8.7x 10-12