Electromagnetic Spectrum Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Per: \_\_\_\_\_\_\_\_

Go to this website to complete the following questions: <http://missionscience.nasa.gov/ems/01_intro.html>

1:  How does Electromagnetic Energy Travel?

2:  What is the Electromagnetic Spectrum?

3:  What is the source of energy across the entire Spectrum?

4:  Why and how does our atmosphere protect us from the Spectrum?

Go to this website to complete the following questions: <http://missionscience.nasa.gov/ems/02_anatomy.html>

5:  How are Electromagnetic waves different from all other waves (mechanical waves)?
               (Hint:  there is something they do not need)

6:  After looking at the diagrams on this page, Electromagnetic waves are formed by the vibrations of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ fields.
7:  Complete the chart on the next page by filling out the information for each type of wave.
8:  After going [here](http://missionscience.nasa.gov/ems/13_radiationbudget.html), read the text and explain what the Earth's Energy Budget is and how it works..

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Type of Wave** | **Wavelength** | **Frequency** | **What can we compare it too?** | **Where do humans use this type of wave?** |
| **Radio Waves**[**Link**](http://missionscience.nasa.gov/ems/05_radiowaves.html) |  |  |  |  |
| **Microwaves**[**Link**](http://missionscience.nasa.gov/ems/06_microwaves.html) |  |  |  |  |
| **Infrared Light**[**Link**](http://missionscience.nasa.gov/ems/07_infraredwaves.html) |  |  |  |  |
| **Visible Light**[**Link**](http://missionscience.nasa.gov/ems/09_visiblelight.html) |  |  |  |  |
| **UV Rays**[**Link**](http://missionscience.nasa.gov/ems/10_ultravioletwaves.html) |  |  |  |  |
| **X-Rays**[**Link**](http://missionscience.nasa.gov/ems/10_ultravioletwaves.html) |  |  |  |  |
| **Gamma Waves**[**Link**](http://missionscience.nasa.gov/ems/12_gammarays.html) |  |  |  |  |

**ASSINGMENT: EM PRESENTATION!!!**

* You may work with one other person.  Don’t ask if you can have groups of three.
* You may use my large sheets of paper or you may use your own paper or poster board,

OR You may create a Prezi, PowerPoint or other form of creative presentation that includes all of the below criteria.

**Required Elements**:  Electromagnetic Spectrum colors, types of waves, examples with pictures or symbols, wavelengths and frequencies.

Draw “thumbnail sketches” or find a graphic of a representative example/use for each type of wave listed below:

* **Radio**: including microwaves, radio signals and radar.  Include descriptions of each type of radio wave.  You also need sketches to represent examples of each type of radio wave.
* **Infrared Rays**:Including heat lamps, thermogram photography, detective work.  Write about the uses of different types of infrared rays.  You need to sketch examples of infrared waves.
* **Visible Spectrum**:  Please choose one of the following to write about in your presentaation: laser uses, fiber optic uses, or holography uses.
* **Ultraviolet Rays**: Including UV lamps, vision in some animals, mineral identification.  You need to write about uses of UV light and a sketch to represent an example.
* **X-Rays**:  Uses and dangers.  You need to write about uses and dangers and have one sketch to represent an example.
* **Gamma Rays**:Write about where they occur and the dangers.  Include at least one sketch of an example.

You will be graded using the Rubric below:

|  |
| --- |
| **Making A Poster : Electromagnetic Spectrum Homework**Student Name:     \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

|  |
| --- |
|  |
| CATEGORY | **4** | **3** | **2** | **1** |
| **Content - Accuracy** | All 7 components of the Electromagnetic Spectrum are presented accurately. | Almost all components of the Electromagnetic Spectrum are displayed accurately. | Many components of the Electromagnetic Spectrum are incorrect or inaccurate. | Only 2-3 elements are correct.  |
| **Graphics - Relevance** | All graphics are related to the topic and make it easier to understand. All borrowed graphics have a source citation. | All graphics are related to the topic and most make it easier to understand. All borrowed graphics have a source citation. | 3-6 graphics relate to the topic. Most borrowed graphics have a source citation. | 1-2 graphics relate to the topic OR several borrowed graphics do not have a source citation. |
| **Labels** | All items of importance on the poster are neatly and clearly labeled. | Almost all items of importance on the poster are neatly and clearly labeled with labels. | Several items of importance on the poster are neatly and clearly labeled with labels. | Labels are too small to view, are messy OR no important items were labeled. |
| **Required Elements** | The poster includes all required elements as well as additional information for types of waves or waves in general. | All required elements and wave types are included on the poster. | All but 1-2 of the required elements or wave types are included on the poster. | Several required elements or wave types were missing. |
| **Attractiveness** | The poster is exceptionally attractive in terms of design, layout, and neatness. | The poster is attractive in terms of design, layout and neatness. | The poster is acceptably attractive though it may be a bit messy. | The poster is distractingly messy or very poorly designed. It is not attractive. |
| **Grammar** | There are no grammatical mistakes on the poster. | There is 1 grammatical mistake on the poster. | There are 2 grammatical mistakes on the poster. | There are more than 2 grammatical mistakes on the poster. |