Tour of the Electromagnetic Spectrum via NASA Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

<https://science.nasa.gov/ems/01_intro> Period \_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_

1. INTRODUCTION TO THE EM SPECTRUM
2. What are atmospheric windows? Why do they exist?
3. Why is it necessary to have space-based instruments to study sources of high-energy radiation in space?
4. ANATOMY OF AN EM WAVE
5. How are EM waves created? What do they carry?
6. Describe the nature of EM waves. Use the key terms electric field and magnetic field.
7. Why are different EM waves described in different terms? ie. Radio and microwaves - frequency (Hz), infrared and visible light – wavelength (m), x-rays and gamma rays – energy (eV)
8. Describe the shortest and longest wavelengths of the EM spectrum according to the site.
9. WAVE BEHAVIORS
10. What can happen when light encounters an object? What determines the behavior?
11. Describe reflection. Draw a picture. Give an example.
12. Describe absorption. Draw a picture. Give an example.
13. Describe diffraction. Draw a picture. Give an example.
14. Describe scatter. Draw a picture. Give an example.
15. Describe refraction. Draw a picture. Give an example.

1. VISUALIZATION: FROM ENERGY TO IMAGE (SKIP)
2. RADIO WAVES

* Wavelength 🡪
* Source 🡪
* Uses 🡪
* Telescope/detection 🡪

1. MICROWAVES

* Wavelength 🡪
* Source 🡪
* Uses 🡪
* Telescope/detection 🡪

1. INFRARED

* Wavelength 🡪
* Source 🡪
* Uses 🡪
* Telescope/detection 🡪

\*\*SKIP NEAR INFRARED

1. VISIBLE LIGHT

* Wavelength 🡪
* Source 🡪
* Uses 🡪
* Telescope/detection 🡪

1. ULTRAVIOLET

* Wavelength 🡪
* Source 🡪
* Uses 🡪
* Telescope/detection 🡪

1. X-RAYS

* Wavelength 🡪
* Source 🡪
* Uses 🡪
* Telescope/detection 🡪

1. GAMMA RAYS

* Wavelength 🡪
* Source 🡪
* Uses 🡪
* Telescope/detection 🡪