

Name: \_\_\_\_\_

**QUEST: Light and the Electromagnetic Spectrum** via NASA.gov

Start your quest by clicking on the link on le blog.

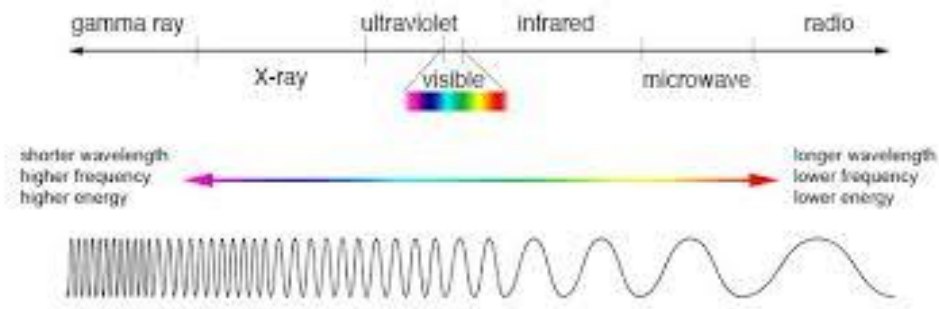
1. Waves we cannot actually see (unlike ripples) and those NOT needing a medium to travel within belong to this category of waves?

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3. Why is sound unable to travel through outer space?

4. How do astronauts overcome this obstacle when communicating in space?

B. Who is Heinrich Hertz and what did he discover? (be brief)



1. From the picture above, how do radio, television, light, and X-rays differ from each other since all are a form of light wave?

7. Which wave type has the longest wavelength in the electromagnetic spectrum? The shortest?

***At the right side of the webpage click on [RADIO WAVES]***

1. What types of technology utilize radio waves?

2. Why do radio telescopes have to be so large compared to optical telescopes?

***MICROWAVES:***

1. The range of wavelength for microwaves measures from \_\_\_\_\_ cm to \_\_\_\_\_ cm.

2. Microwave towers, looking like they have drums attached to them transmit these types of information.

3. What the heck is the “cosmic microwave background”? What significance is this discovery?

***INFRARED:***

1. What does “thermal” waves mean?

2. Short infrared wavelengths are used in what technology?

3. How big is a micron? (use scientific notation)

4. Can humans actually see (without any aid) infrared radiation? \_\_\_\_\_

5. What famous movie about aliens starring Arnold Schwarzenegger uses infrared light in the opening scene?

### ***VISIBLE LIGHT:***

1. What gives rise to a rainbow...how is it created?
2. List the colors of the visible spectrum (the rainbow) in order of shortest wavelength to longest.
3. What determines the color of an object?
4. What type of structure within our eye detects color?

### ***ULTRAVIOLET:***

1. Discuss the category of animal that sees in the UV spectrum instead of the visible light humans can see?
2. Tell me all about sunburns.
3. What gas is chiefly responsible for blocking most of the UV radiation of the Sun?
4. Many scientists like to study cosmic objects in the UV spectrum because objects giving off large amounts of UV light are typically very \_\_\_\_\_ and \_\_\_\_\_.

### ***X-RAYS***

1. Who first discovered X-rays? Mr. X? :)

2. The first X-rays were photographs of these body parts:
3. Tell me why bones show up on an X-ray photograph and not skin.
4. NASA's Mars Exploration Rover, Spirit uses X-rays to do what?

**GAMMA RAYS:**

1. Why are gamma rays not able to reflect off a mirror's surface?
2. What are two ways in which gamma rays are produced?
3. Relatively, how much energy is a gamma ray burst compared to the Sun's energy output?

In your own words, IN FRENCH, tell me which light source you want to have as a superpower. You have to tell me what the light does (gamma rays are used for...), how you will use it, and if you will be good or evil ;)

Due for Tuesday