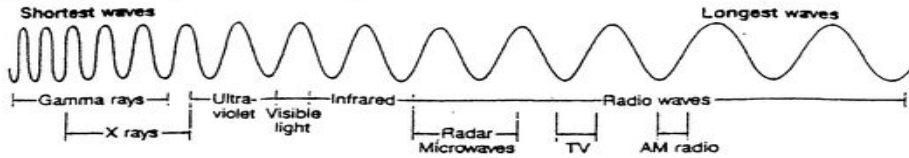


**Inspecting the Spectrum**

The chart below shows the electromagnetic spectrum. Study the diagram of the spectrum. Then answer the questions that follow.



1. Are X rays longer or shorter than radio waves? Shorter
2. Are all gamma rays shorter than X rays? Explain your answer. No there is a region where X-rays and gamma rays overlap
3. Which are longer—AM radio waves or TV waves? AM radio
4. Can you see radio waves? How does their position on the electromagnetic spectrum demonstrate this? No they are longer than the wavelength our eyes see.
5. How does the wavelength of waves used in microwave ovens compare with the wavelength of waves used for radar? They overlap
6. Which color of visible light has the longest wavelength? The shortest? Red is longest Violet is shortest
7. Use a dictionary to look up the meaning of the prefix *infra-*. What does this tell you about the position of infrared radiation on a diagram of the electromagnetic spectrum? Infra means below and infrared is just longer than visible red so infrared is lower energy than red
8. What is the dictionary definition of the prefix *ultra-*? How does this relate to the location of ultraviolet wavelengths on the electromagnetic spectrum? Ultra means beyond or above so ultra violet is just shorter than visible violet light and it is higher energy than violet
9. Ultraviolet rays cause sunburn, and X rays can penetrate deep inside our bodies. Gamma rays kill cancer cells. What does this show about how living material is affected by the shortest wavelengths in the electromagnetic spectrum? The shorter the wavelength the more damaging the energy is to living tissue.