

Electromagnetic Waves

Name: _____

Part 1: Fill in the Blank

- 1) The color of visible light that has the longest wavelength is _____.
- 2) A heat lamp produces _____ radiation.
- 3) A wave with a high frequency has a _____ wavelength.
- 4) Electromagnetic waves with a lot of energy have _____ wavelengths.
- 5) _____, _____, and _____ are the three types of ionizing (harmful) radiation.

Part 2: Calculations (use the diagram to the right)

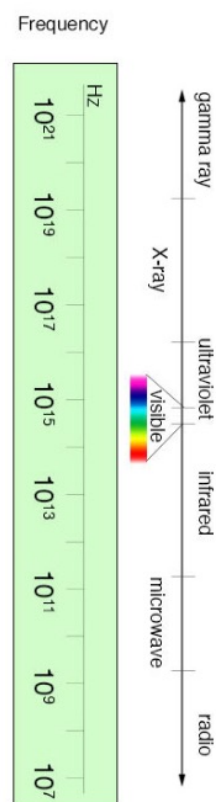
- 6) What is the frequency and **type** of radiation which has a wavelength of 6.97×10^{-7} meters?

- 7) What is the frequency and **type** of radiation has a wavelength of 3.45×10^{-2} meters?

- 8) What is the frequency and **type** of radiation that has $9.95 \times 10^{-14} \text{ J}$?

- 9) What is the wavelength for the wave in #8?

- 10) List the colors of visible light from the shortest wavelength to longest wavelength.

Answers: 6) $4.3 \times 10^{14} \text{ Hz}$ 9) $2.00 \times 10^{-12} \text{ m}$

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Part 1: Fill in the Blank

- 1) _____ radiation has a shorter wavelength than x ray radiation.
- 2) Cell phones and satellite communication use _____ radiation for their signals.
- 3) _____ is the property of a wave that is indirectly related to frequency.
- 4) Low energy waves have _____ wavelengths and _____ frequencies.
- 5) _____, _____, and _____ are three examples of types of nonionizing (unharmful) radiation.

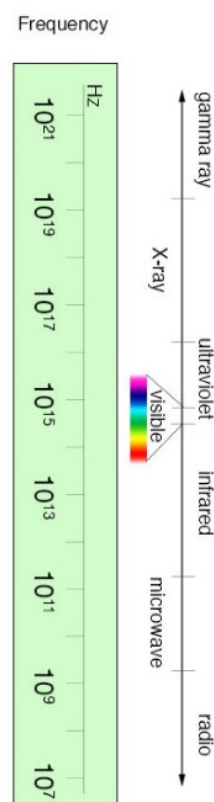
Part 2: Calculations (use the diagram to the right)

- 6) What is the frequency and **type** of radiation which has a wavelength of 1.56×10^{-11} meters?

- 7) What is the frequency and **type** of radiation has a wavelength of 5.43×10^{-4} meters?

- 8) How much energy does a wave of infrared radiation have with a wavelength of 9.22×10^{-6} m?

- 9) What is the wavelength and type of wave that has 2.65×10^{-18} J?



- 10) List the types of EM radiation (including the colors of visible light) from the shortest wavelength to longest wavelength.

Answers: 6) 1.92×10^{19} Hz 9) 7.51×10^{-8} m