

Wavelength and Energy Worksheet

1. A Bunsen burner is lit. A student has sensory preceptors that allow them to feel the photons emitted by the flame with a wavelength of 2.0×10^{-5} m. Find the A) frequency of these photons and B) the portion of the electromagnetic spectrum with which they are associated.

2. Another photon is emitted by the flame has an energy of 4.23×10^{-19} Joules. Find the A) frequency, B) wavelength in meters and nanometers, and C) the portion of the spectrum for this photon.

3. Ultraviolet light causes a chemical reaction in your skin and darken the pigments in your skin. If the wavelength of these photons is 200. nanometers, find the A) wavelength in meters B) frequency C) energy of these photons.

4. An excited sodium atom emits light with a wavelength of 592 nm. Find the A) wavelength in meters, B) frequency, C) energy of this photon, and D) the part of the electromagnetic spectrum where this photon falls.

5. An excited H atom emits light with energy of 1.63×10^{-18} J. Find the A) frequency, B) wavelength of this photon, and C) the part of the electromagnetic spectrum where this photon belongs.

6. The wavelength of green light is about 522 nm. What is the frequency of this radiation?

7. What is the wavelength of a photon that has a frequency of 2.10×10^{14} Hz? Answer in nm and determine what type of radiation this is.

8. What is the energy of a photon with:

a) A wavelength of 827 nm? What type of radiation is it?

b) A wavelength of 1 nm? What type of radiation is it?