Practice Problems:  *Wavelength, Frequency, Energy content of One Quantum of Light.*

Examples:

I.     A certain photon of light has a wavelength of 422 nm.  **What is the frequency** of the light?

$$c = \lambda \nu$$

$$E = h\nu$$

$$E = mc^2$$

$$c = 3.00 \times 10^8 \ ^m/_{sec}$$

$$h = 6.626 \times 10^{-34} \ J \cdot sec$$

$$Hz = \ ^1/_{sec}$$

II.    **What is the energy** of a quantum of light from part I.

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1.  What is the energy of a quantum of light with a frequency of  $7.39 \times 10^{14}$ Hz?

2.  What is the wavelength of the quantum of light in question 1?

3.  A certain red light has a wavelength of 680 nm.  What is the frequency of the light?

4. What is the energy of a quantum of light from question 3?

5. A certain blue light has a frequency of $6.91 \times 10^{14}$ Hz. What is the wavelength of the light?

6. What is the energy of a quantum of light from question 5?

7. The energy for a quantum of light is $2.84 \times 10^{-19}$ J. What is the wavelength of this light?