Name
Date

Wavelength, Frequency, Quantum and Average Atomic Mass Wkst

1. What is the wavelength of a light with the frequency of 1.81×10^{-14} Hz?

$\lambda = 1.66 \times 10^{22}$ m

2. What is the frequency of a light with the wavelength of 680nm?

$\nu = 4.4 \times 10^{14}$ Hz

3. What is the energy of the light wave in problem #2?

$E = 2.9 \times 10^{-19}$ J

4. What is the energy of light with the wavelength 1230nm?

$\nu = 2.44 \times 10^{14}$ Hz

$E = 1.62 \times 10^{-19}$ J

5. Calculate the energy of a quantum of radiant energy, whose frequency is 3.82×10^{-14} Hz. Show work!

2.53×10^{-47} J

6. According to the formula $c = \lambda\nu$, as frequency gets larger (higher) the wavelength gets lower

7. What is the energy of light with the wavelength 732 nm(nanometers)?

$C = \lambda\nu \quad \nu = \frac{c}{\lambda} = \frac{3 \times 10^{8}\ m/s}{732 \times 10^{-7} m} = 4.10 \times 10^{14}$ Hz

$E = h\nu = (6.63 \times 10^{-34}\ J \cdot s)(4.10 \times 10^{14}\ Hz) = \boxed{2.72 \times 10^{-19}\ J}$

8. A certain light has a wavelength of 923 nm. What is its frequency?

$\nu = 3.25 \times 10^{14}$ Hz

9. What is the energy of light with the wavelength of 943nm?

$\nu = 3.18 \times 10^{14}$ Hz

$\boxed{E = 2.11 \times 10^{-19}\ J}$

10. What is the frequency of a light with the wavelength of 860nm?

$\nu = 3.49 \times 10^{14}$ Hz

11. What is the energy of the light wave in # 10?

2.31×10^{-19} J