1. What is the frequency in hertz of UV light that has an energy of 2.39×10^{-18} J?

$\nu = ?\ Hz$

given $E = 2.39 \times 10^{-18}\ J$

want: $\nu = ?\ Hz$

$E = h\nu$

$$\frac{2.39 \times 10^{-18}\ J}{6.626 \times 10^{-34}\ J \cdot s} = \frac{(6.626 \times 10^{-34}\ J \cdot s)(\nu)}{6.626 \times 10^{-34}\ J \cdot s}$$

$\nu = 3.61 \times 10^{15}\ \frac{1}{s}$

$= 3.61 \times 10^{15}\ Hz$

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

Want: $\lambda = ?\ nm$

given: $E = 2.39 \times 10^{-18}\ J$

$\nu = 3.61 \times 10^{15}\ \frac{1}{s}$

$c = \lambda\nu$

$$\frac{3.00 \times 10^{8}\ \frac{m}{s}}{3.61 \times 10^{15}\ \frac{1}{s}} = \frac{(\lambda)(3.61 \times 10^{15}\ \frac{1}{s})}{3.61 \times 10^{15}\ \frac{1}{s}}$$

$\lambda = 8.31 \times 10^{-8}\ m$

$$\lambda = 8.31 \times 10^{-8}\,\cancel{m} \cdot \frac{1\ nm}{10^{-9}\,\cancel{m}} = \boxed{83.1\ nm}$$

$$(8.31 \times 10^{-8})(10^{9}) = \boxed{8.31 \times 10^{1}\ nm}$$