

# Example Of Energy Equation Problem

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What is the frequency of light that has an energy of  $4.38 \times 10^{-19} \text{ J}$  ?

By Dimensional Analysis

1.  $f \text{ (Hz)}$ ?

2.  $4.38 \times 10^{-19} \text{ J}$

$6.60 \times 10^{-34} \frac{\text{J}}{\text{Hz}}$

3.  $(4.38 \times 10^{-19} \text{ J}) \left( \frac{1 \text{ Hz}}{6.60 \times 10^{-34} \text{ J}} \right) = 6.636 \times 10^{14} \text{ Hz} = 6.64 \times 10^{14} \text{ Hz}$

By Equation

1.  $f \text{ (Hz)}$ ?

2.  $E = 4.38 \times 10^{-19} \text{ J}$

$h = 6.60 \times 10^{-34} \frac{\text{J}}{\text{Hz}}$

3.  $E = h \cdot f \Rightarrow f = \frac{E}{h} = \frac{4.38 \times 10^{-19} \text{ J}}{6.60 \times 10^{-34} \frac{\text{J}}{\text{Hz}}} = 6.636 \times 10^{14} \text{ Hz} = 6.64 \times 10^{14} \text{ Hz}$

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