task_239xqp7zjr32bv4a_with_calculation

Student Group

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Exercise E12 Conversions: Speed, Energy, and Power

Convert the following values into the stated units (... has the charge of about $1.6 \cdot 10^{-19}{\rm C}$)

1. A vehicle speed of $80.00~{\rm {km}\over{h}}$ in ${\rm {m}\over{s}}$

Solution

Fast Solution

\begin{align*} v &= 80~{\rm {km}\over{h}} = 80~{\rm {1'000~m}\over{3'600~s}} = 80~{\rm {m}\over{3.6~s}} \\ &= 22.22~{\rm {m}\over{s}} \end{align*}

\begin{align*} v = 80.00~{\rm {km}\over{h}} \quad \rightarrow \quad v = {{\rm numerical~value}\over{3.6}} \quad \rightarrow \quad v = 22.22~{\rm {m}\over{s}} \end{align*}

\cdot 20 \cdot 12.00 ... \end{align*} W_{\rm absorbed} &= 1~{\rm µW} \cdot 864'000~{\rm s} \\ &= 864'000~{\rm µWs} \\ &= 864~{\rm mWs} \\ &= 0.864~{\rm Ws} \\ &= 0.864~{\rm J} \end{align*}