task_f64r8g2jf4pdomfi_with_calculation

Student Group

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Exercise E16 Conversion: Energy, Power and Area

1. How many solar panels are needed?
2. What is the average power consumption of the car per day?

Result:

Solution

Solution

Solution

\begin{align*} A_{\rm panel} &= 1.9~{\rm m} \cdot 1.1~{\rm m} = 2.1~{{\rm m^{2}}} \\ n_{\rm panels} &= {{A_{\rm roof}}\over{A_{\rm panel}}} = {{40~{\rm m^{2}}}\over{2.1~{\rm m^{2}}}} = 19.04~{\rm panels} \rightarrow 20~{\rm panels} \end{align*}

\begin{align*} {{W}\over{l}} &= {{16~{\rm kWh}}\over{100~{\rm km}}} = 0.16 {{~{\rm kWh}}\over{~{\rm km}}} \\ W &= 50~{\rm km} \cdot 0.16 {{~{\rm kWh}}\over{~{\rm km}}} = 8~{\rm kWh} \end{align*}

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