

task_f64r8g2jf4pdomfi_with_calculation

Student Group

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conversions, energy, power, area, chapter1 1

Exercise E10 Conversion: Energy, Power and Area

2. The number of panels and the length of the roof of the car is to be determined. The car has an average $100 \sim \{\rm km\}$ per day and an usable battery capacity of $60 \sim \{\rm kWh\}$. Solar panels produces per $1 \sim \{\rm m^2\}$ in average in December $0.2 \sim \{\rm kWh\}$. The car is driven $50 \sim \{\rm km\}$ per day. The size of a distinct solar module with $460 \sim \{\rm W_p\}$ (Watt peak) is $1.9 \sim \{\rm m\}$ times $1.1 \sim \{\rm m\}$.

$$A = 460 \sim \{\rm W_p\} \cdot 1.9 \sim \{\rm m\} \cdot 1.1 \sim \{\rm m\} = 902 \sim \{\rm m^2\}$$

.. What is the average power consumption of the car per day?

$$A \cdot 0.2 \sim \{\rm kWh\} = 180 \sim \{\rm kWh\}$$

$$180 \sim \{\rm kWh\} / 50 \sim \{\rm km\} = 3.6 \sim \{\rm kWh\} / \{\rm km\}$$

$$3.6 \sim \{\rm kWh\} / \{\rm km\} = 19.04 \sim \{\rm panels\}$$

$$\begin{aligned} \{W\} &= \{16 \sim \{\rm kWh\}\} / \{100 \sim \{\rm km\}\} = 0.16 \\ \{W\} &= 50 \sim \{\rm km\} \cdot 0.16 \{W\} = 8 \sim \{\rm kWh\} \end{aligned}$$

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