

# task\_f64r8g2jf4pdomfi\_with\_calculation

## Student Group

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**Exercise E12 Conversion: Energy, Power and Area**

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

Result: 
$$N = \frac{460 \text{ Wp} \times 20 \text{ panels}}{460 \text{ Wp}} = 20$$
 .. What is the average power consumption of the car per day?  

$$P = \frac{460 \text{ Wp} \times 20 \text{ panels}}{20 \text{ panels}} = 460 \text{ W}$$
 Solution: 
$$\frac{460 \text{ W}}{20 \text{ panels}} = 19.04 \text{ W} \rightarrow 20 \text{ panels}$$

$$\frac{W}{l} = \frac{16 \text{ kWh}}{100 \text{ km}} = 0.16$$

$$\frac{W}{l} = 50 \text{ km} \times 0.16 \frac{\text{kWh}}{\text{km}} = 8 \text{ kWh}$$

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