Answer on Question 69252, Physics, Other

Question:

A car moves with a speed of $30\ km/h$ for half an hour, $25\ km/h$ for an hour and $40\ km/h$ for two hours. Calculate the average speed of the car.

Solution:

By the definition, the average speed is the total distance traveled divided by the total time:

$$v_{avg} = \frac{d_{tot}}{t_{tot}}.$$

Let's first find the total distance traveled by the car:

$$d_{tot} = d_1 + d_2 + d_3 = v_1 t_1 + v_2 t_2 + v_3 t_3 =$$
$$= 30\ \frac{km}{h} \cdot 0.5\ h + 25\ \frac{km}{h} \cdot 1.0\ h + 40\ \frac{km}{h} \cdot 2.0\ h = 120\ km.$$

Then, we can find the total time:

$$t_{tot} = t_1 + t_2 + t_3 = 0.5\ h + 1.0\ h + 2.0\ h = 3.5\ h.$$

Finally, we can calculate the average speed of the car:

$$v_{avg} = \frac{d_{tot}}{t_{tot}} = \frac{120\ km}{3.5\ h} = 34.28\ \frac{km}{h}.$$

Answer:

$$v_{avg} = 34.28\ \frac{km}{h}.$$