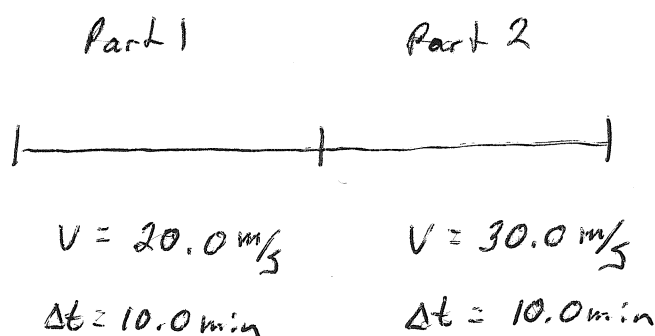


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①

You drive in a straight line at 20.0 m/s for 10.0 minutes, then at 30.0 m/s for another 10.0 minutes.

Ⓔ Is your average speed $>$, $<$, or $=$ 25 m/s ? , verify.



Total average speed

$$v_{\text{total}} = \frac{\Delta x_{\text{total}}}{\Delta t_{\text{total}}}$$

Step 1: Determine total distance and total time

$$\Delta t_{\text{Total}} = \Delta t_1 + \Delta t_2 = 20.0 \text{ min}$$

$$\Delta x_1 = ?$$

$$v = \frac{\Delta x}{\Delta t}$$

$$\Delta x = v \Delta t = (20.0 \frac{m}{s}) 10.0 \text{ min} \left(\frac{60s}{1 \text{ min}} \right)$$

$$= 1.2 \times 10^4 \text{ m}$$

$$\Delta x_2 = ?$$

$$\Delta x = v \Delta t = (30.0 \frac{m}{s}) 10.0 \text{ min} \left(\frac{60s}{1 \text{ min}} \right)$$

$$= 1.8 \times 10^4 \text{ m}$$

$$\Delta x_{\text{Total}} = \Delta x_1 + \Delta x_2 = 3.0 \times 10^4 \text{ m}$$

$$v_{\text{Total}} = \frac{\Delta x_{\text{Total}}}{\Delta t_{\text{Total}}} = \frac{3.0 \times 10^4 \text{ m}}{20.0 \text{ min} \left(\frac{60s}{1 \text{ min}} \right)} = \boxed{25.0 \frac{m}{s}}$$