

Rozwiązanie:

$$v_1 = 10 \frac{km}{h}$$

$$v_2 = 40 \frac{km}{h}$$

$$v_{\text{śred}} = \frac{s}{t}$$

$$\text{czas podjazdu } t_1 = \frac{\frac{1}{2}s}{v_1}$$

$$\text{czas zjazdu } t_2 = \frac{\frac{1}{2}s}{v_2}$$

$$t = t_1 + t_2$$

$$v_{\text{śred}} = \frac{s}{t} = \frac{s}{t_1 + t_2} = \frac{s}{\frac{\frac{1}{2}s}{v_1} + \frac{\frac{1}{2}s}{v_2}} = \frac{s}{\frac{1}{2}s \left( \frac{1}{v_1} + \frac{1}{v_2} \right)} = \frac{2}{\frac{1}{v_1} + \frac{1}{v_2}} = \frac{2v_1v_2}{v_1 + v_2}$$

$$v_{\text{śred}} = \frac{2 \cdot 40 \frac{km}{h} \cdot 10 \frac{km}{h}}{40 \frac{km}{h} + 10 \frac{km}{h}} = \frac{800 \frac{km^2}{h^2}}{50 \frac{km}{h}} = 16 \frac{km}{h}$$