Question. A person travels 20 m wide road, half in v1 velocity and other half in v2 velocity. What would be the average velocity of the man?

Solution

$$\langle v \rangle = \frac{S_1 + S_2}{t_1 + t_2} = \frac{S/2 + S/2}{S/(2v_1) + S/(2v_2)} = \frac{1+1}{1/v_1 + 1/v_2} = \frac{2v_1 v_2}{v_1 + v_2}$$

So,

$$\langle v \rangle = \frac{2v_1 v_2}{v_1 + v_2}.$$

Answer. $\langle v \rangle = \frac{2v_1 v_2}{v_1 + v_2}.$