

### Answer on Question #42612, Physics, Mechanics | Kinematics | Dynamics

**Task:** a body goes from P to Q with a velocity 40 m/s and comes back with velocity of 60 m/s. what is the average velocity of the body during the journey?

**Solution:**

$$V_1 = 40 \text{ m/s}, V_2 = 60 \text{ m/s}.$$

$$V_{avvel} = \frac{S_a}{t}, \text{ where } S_a = S_{pq} + S_{qp} = \{S_{pq} = S_{qp} = S\} = 2S[m]$$

$$t_1 = \frac{S_{pq}}{V_1} = \frac{S}{40} [s]; t_2 = \frac{S_{qp}}{V_2} = \frac{S}{60} [s]$$

$$t = t_1 + t_2 = \frac{S}{40} + \frac{S}{60} = \frac{S}{24} [s];$$

$$V_{avvel} = \frac{S_a}{t} = \frac{2S}{\frac{S}{24}} = 48 \text{ m/s}.$$

**Answer:** the average velocity of the body during the journey is  $V_{avvel} = 48 \text{ m/s}$ .