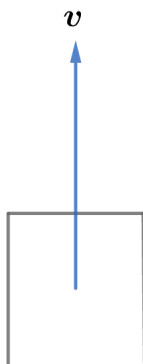


# 2015 F=ma Exam: Problem 2

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The average speed  $v$  is

$$v = \frac{d}{t}$$

where  $d$  is the distance traveled and  $t$  is the time taken. We are given that the car travels at speed  $v_1$  for distance  $d_1$  in the first part of the journey and at  $v_2$  for  $d_2$  in the second part of the journey. The total distance is

$$d = d_1 + d_2$$

The time for the first part is  $t_1 = d_1/v_1$ . The time for the second part is  $t_2 = d_2/v_2$ . Thus, the total time is

$$t = t_1 + t_2 = \frac{d_1}{v_1} + \frac{d_2}{v_2}$$

Putting everything together,

$$v = \frac{d_1 + d_2}{\frac{d_1}{v_1} + \frac{d_2}{v_2}} = \frac{25 + 75}{\frac{25}{80} + \frac{75}{50}} \text{ km/hr} = 55.2 \text{ km/hr}$$

so the answer is  $\boxed{\text{A}}$ .