13. Two entrants in a school's sponsored run adopt different tactics. Angus walks for half the time and runs for the other half, whilst Bruce walks for half the distance and runs for the other half. Both competitors walk at 3mph and run at 6mph. Angus takes 40 minutes to complete the course. How many minutes does Bruce take?

A 30 B 35 C 40 D 45 E 50





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**13. D** Angus completes the course in 40 minutes, so he spends 20 minutes (which is $\frac{1}{3}$ of an hour) walking and the same time running. By using distance = speed × time, the length of the course is $3 \times \frac{1}{3} + 6 \times \frac{1}{3} = 1 + 2 = 3$ miles.

Bruce completes the course by walking for $1\frac{1}{2}$ miles and running for $1\frac{1}{2}$ miles. So, by using time $= \dfrac{\text{distance}}{\text{speed}}$, Bruce's total time in hours is $\dfrac{1\frac{1}{2}}{3} + \dfrac{1\frac{1}{2}}{6} = \dfrac{1}{2} + \dfrac{1}{4} = \dfrac{3}{4}$ of an hour. So Bruce takes 45 minutes to complete the course.