19. Hamish and his friend Ben live in villages which are 51 miles apart. During the summer holidays, they agreed to cycle towards each other along the same main road. Starting at noon, Hamish cycled at x mph. Starting at 2 pm, Ben cycled at y mph. They met at 4 pm. If they had both started at noon, they would have met at 2.50 pm. What is the value of y?

A 7.5 B 8 C 10.5 D 12 E 12.75

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19. C The distance cycled by Hamish between noon and 4 pm is $4x$.
The distance cycled by Ben between 2 pm and 4 pm is $2y$.
They meet at 4 pm hence $4x + 2y = 51$ or $2x + 2(x + y) = 51$ (*).
If they had both started at noon then they would have met at 2:50 pm and so $2\frac{5}{6}(x+y) = 51$.
Hence $x + y = 51 \times \frac{6}{17} = 18$. Hence from (*) $2x + 2 \times 18 = 51$.
Hence $2x = 15$ giving $x = 7\frac{1}{2}$. Thus $y = 10\frac{1}{2}$.