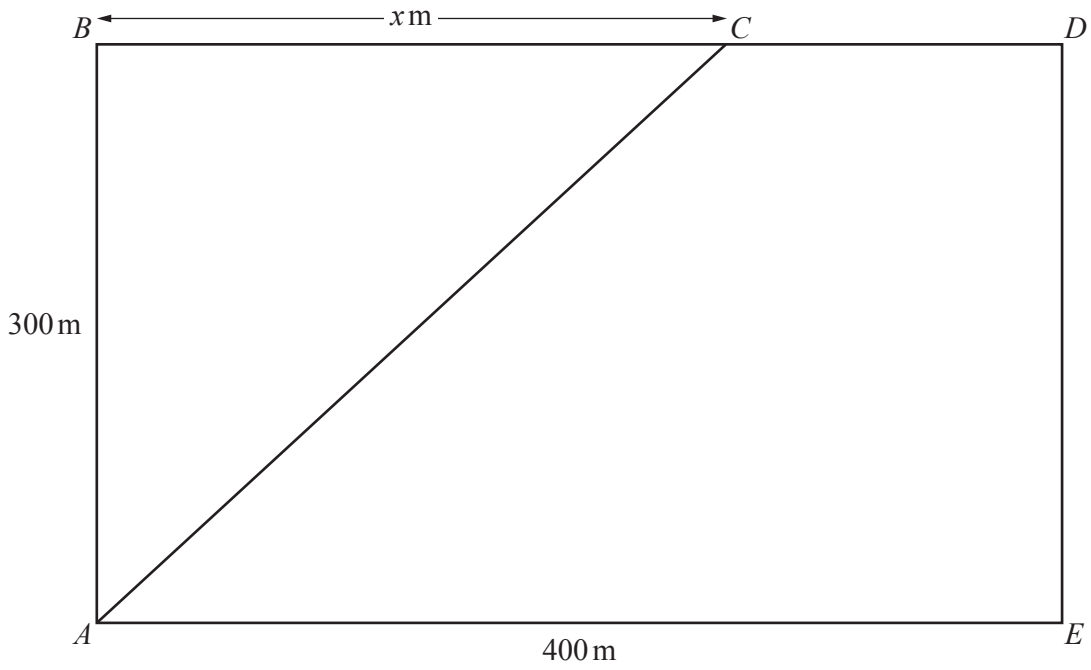
9



The rectangle $ABCDE$ represents a ploughed field where $AB = 300\,\text{m}$ and $AE = 400\,\text{m}$. Joseph needs to walk from A to D in the least possible time. He can walk at $0.9\,\text{ms}^{-1}$ on the ploughed field and at $1.5\,\text{ms}^{-1}$ on any part of the path BCD along the edge of the field. He walks from A to C and then from C to D. The distance $BC = x\,\text{m}$.

(a) Find, in terms of x, the total time, Ts, Joseph takes for the journey. [3]

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(b) Given that x can vary, find the value of x for which T is a minimum and hence find the minimum value of T. [6]