1.

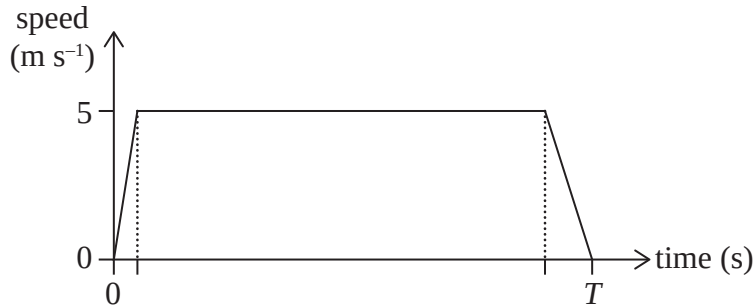

Figure 1

Figure 1 shows a sketch of the speed-time graph for a model of the motion of a runner travelling along a straight horizontal road from a point *A* to a point *B*.

The distance from *A* to *B* is 400 metres.

In the model of the motion, the runner

- starts from rest at *A* at time $t = 0$
- then moves with constant acceleration for 5 seconds, reaching a maximum speed of $5\,\text{m s}^{-1}$
- then travels at a constant speed of $5\,\text{m s}^{-1}$
- then moves with constant deceleration for 15 seconds, until coming to rest at *B*
- travels from *A* to *B* in *T* seconds

(a) Find the value of *T*.

(3)

(b) State **one** reason why the **actual** time taken to travel from *A* to *B* might not be *T* seconds.

(1)