

7. A train travels along a straight horizontal track between two stations, *A* and *B*.

In a model of the motion, the train starts from rest at *A* and moves with constant acceleration 0.3 m s^{-2} for 80 s.

The train then moves at constant velocity before it moves with a constant deceleration of 0.5 m s^{-2} , coming to rest at *B*.

- (a) For this model of the motion of the train between *A* and *B*,

- (i) state the value of the constant velocity of the train,
- (ii) state the time for which the train is decelerating,
- (iii) sketch a velocity-time graph.

(3)

The total distance between the two stations is 4800 m.

- (b) Using the model, find the total time taken by the train to travel from *A* to *B*.

(3)

- (c) Suggest one improvement that could be made to the model of the motion of the train from *A* to *B* in order to make the model more realistic.

(1)