8 A train travels 9 km from station A to station B.

It takes 15 minutes.

(a) (i) State the equation linking average speed, distance moved and time taken.

(1)

(ii) Calculate the average speed of the train and give its unit.

(3)

Average speed = ... unit .....

(iii) The maximum speed of the train must be higher than the value you have calculated.

Explain why.

(2)

.....

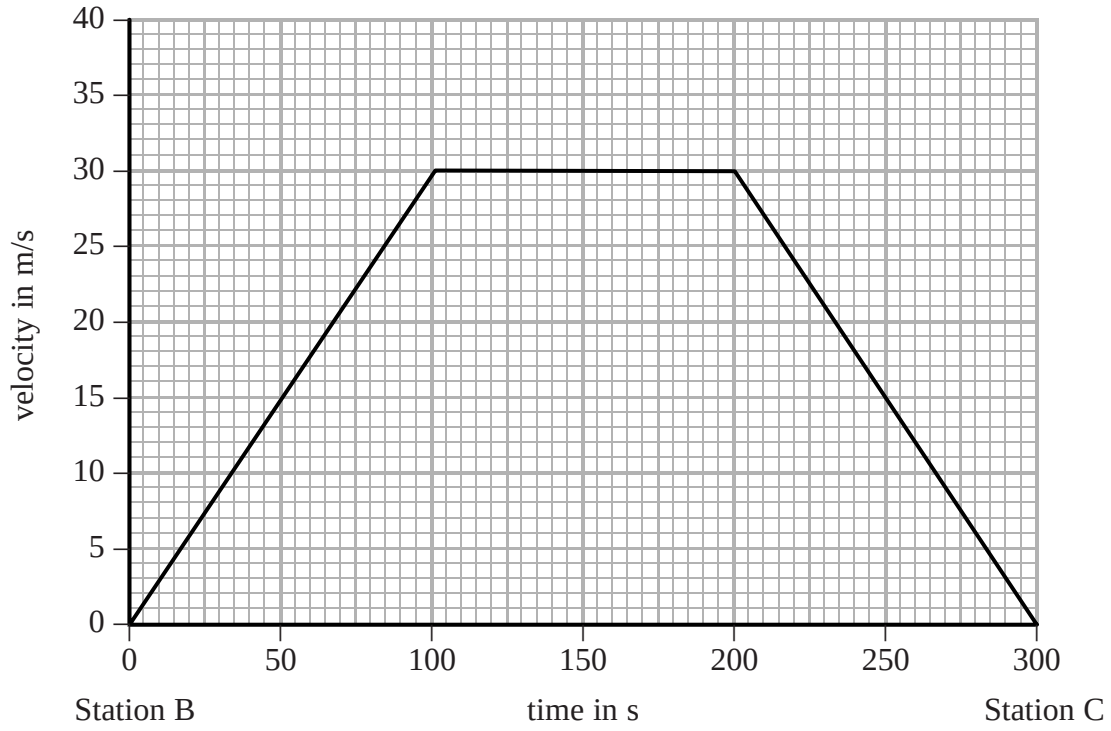
.....

.....

.....

(b) The train continues along a straight track from station B to station C.

The graph shows how the velocity of the train changes with time during this part of the journey.



(i) Use the graph to calculate the acceleration of the train, in m/s^2, during the first 100 seconds after it leaves station B.

(3)

Acceleration = ... m/s^2

(ii) Use the graph to calculate the distance, in m, between station B and station C.

(3)

Distance = ... m

(Total for Question 8 = 12 marks)