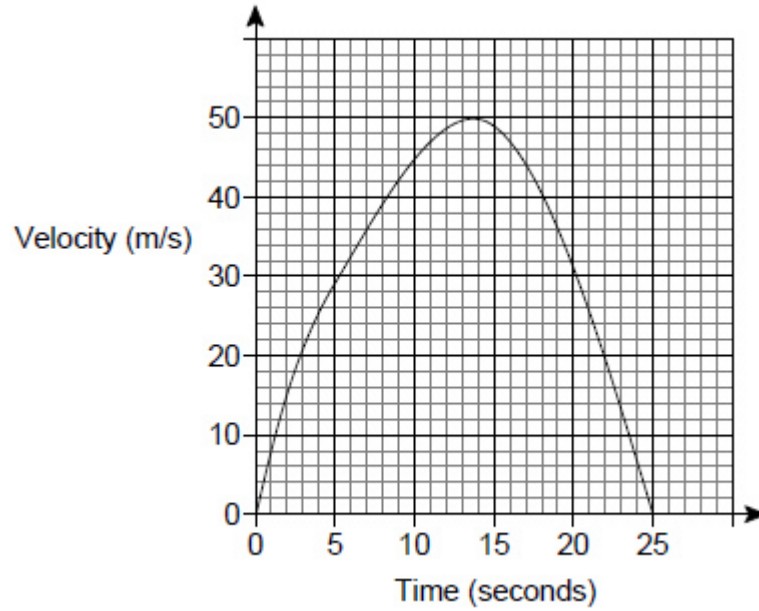


Non-Calculator

Q1.

Here is a velocity-time graph of a car.



Estimate the distance travelled in the first 10 seconds.

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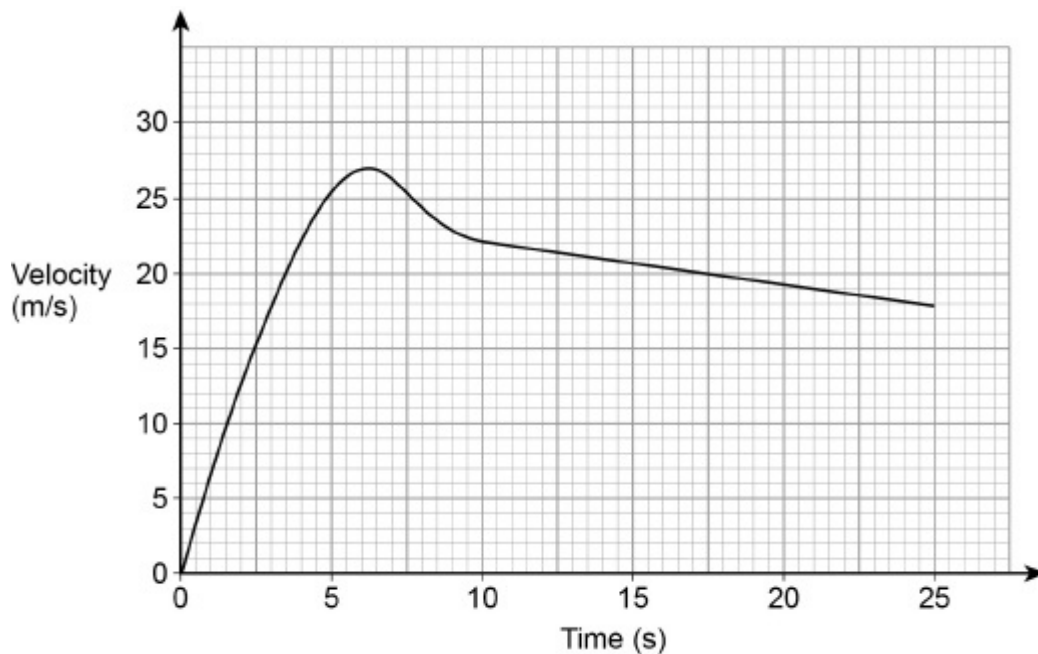
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Answer ..... metres  
(Total 2 marks)

Q2.

Here is a velocity-time graph of a motorbike for 25 seconds.



(a) After how many seconds was the acceleration zero?

Answer \_\_\_\_\_ seconds

(1)

(b) Work out the distance travelled in the last 15 seconds.

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Answer \_\_\_\_\_ metres

(2)

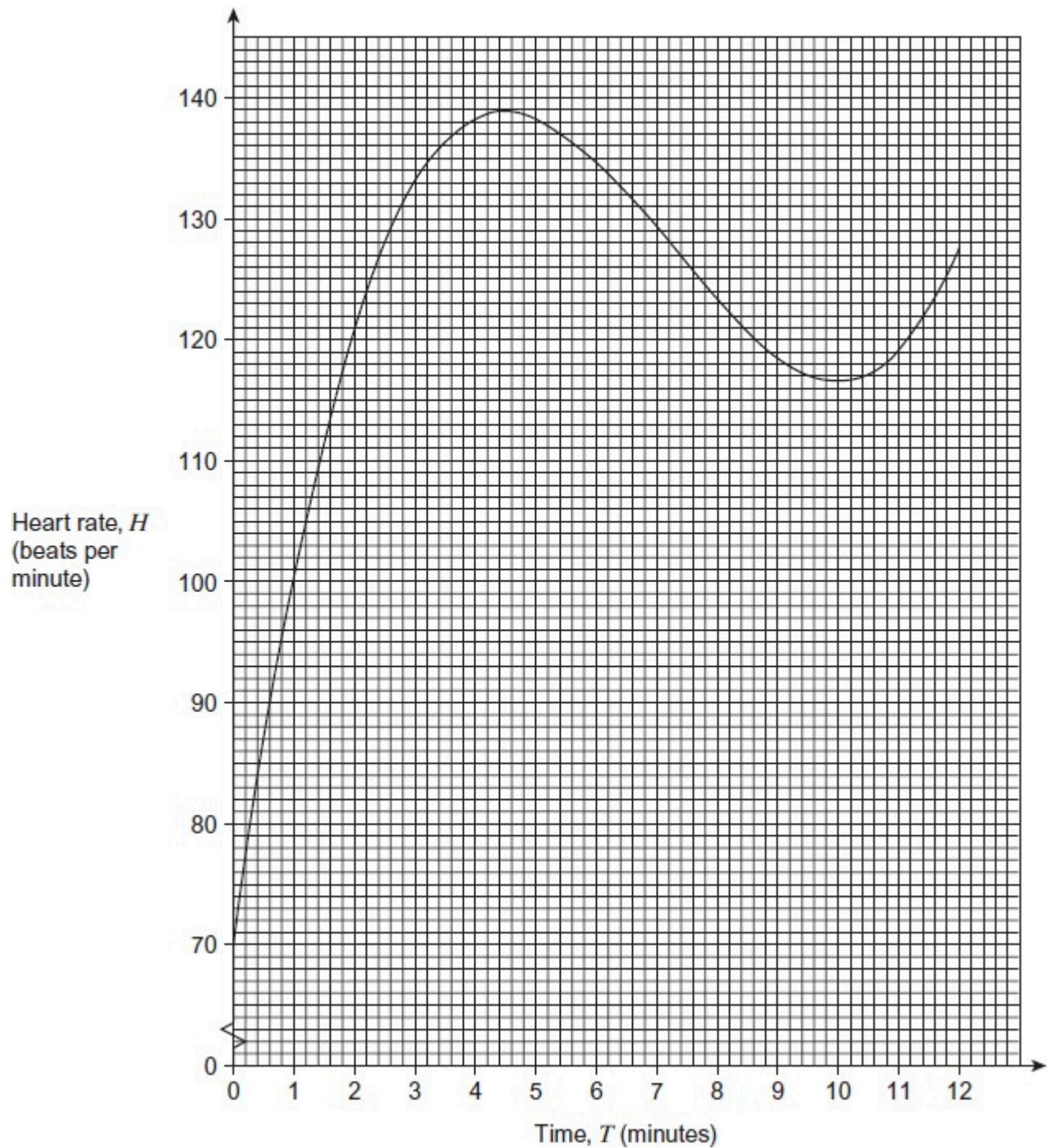
(Total 3 marks)

## Calculator

Q3.

Leroy goes to a gym to exercise.

The graph shows his heart rate (beats per minute) during 12 minutes of exercise.



(a) What was his heart rate when he started to exercise?

Answer \_\_\_\_\_ beats per min

(1)

(b) How many minutes of exercise did it take for him to reach his highest heart rate?

Answer \_\_\_\_\_ min

(1)

(c) By drawing a tangent, work out the rate of increase of  $H$  when  $T = 4$   
You must show your working.

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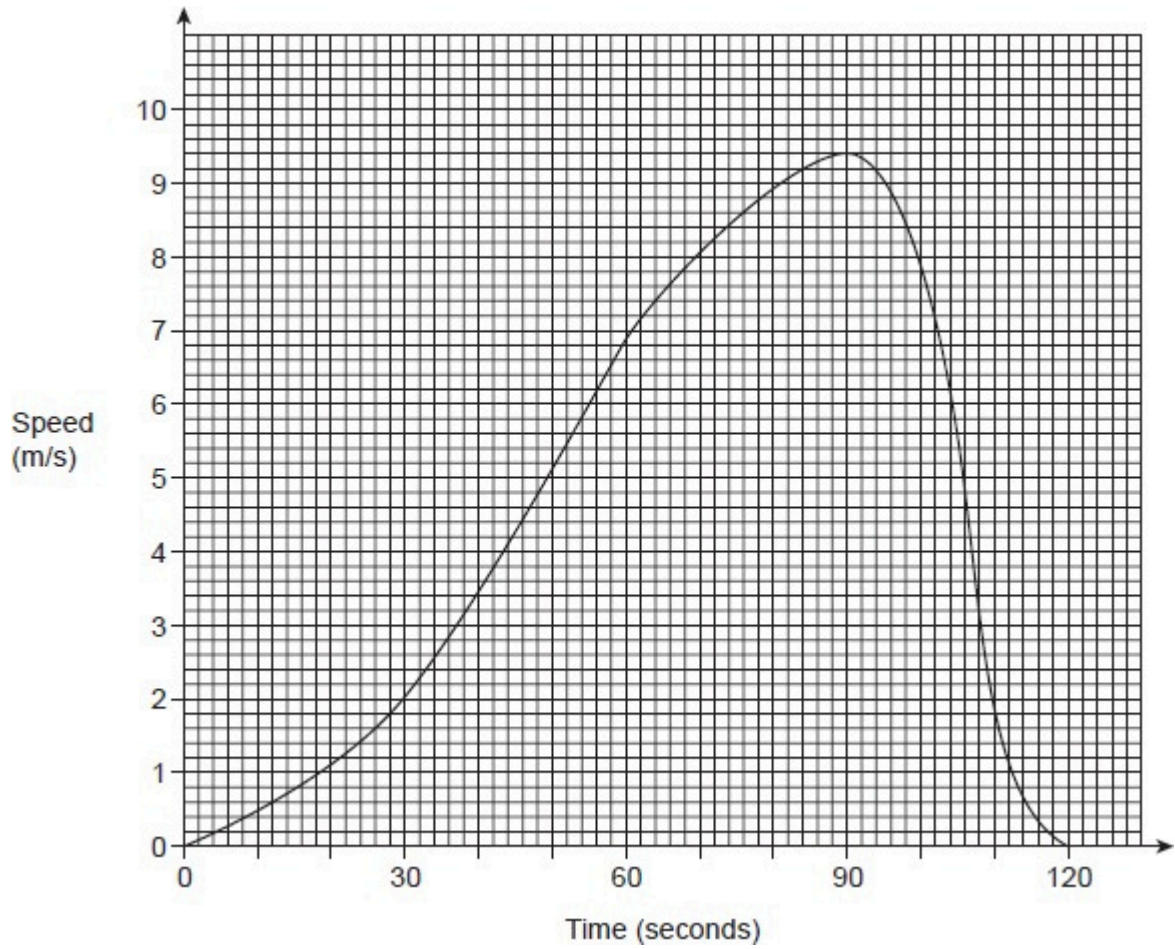
Answer \_\_\_\_\_ beats per min<sup>2</sup>

(3)

(Total 5 marks)

Q4.

The graph shows the speed of a snowboarder for 2 minutes.



- (a) Estimate the distance travelled by the snowboarder.  
State the units of your answer.

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Answer \_\_\_\_\_

(4)

(b) Work out the gradient of the graph at 70 seconds.

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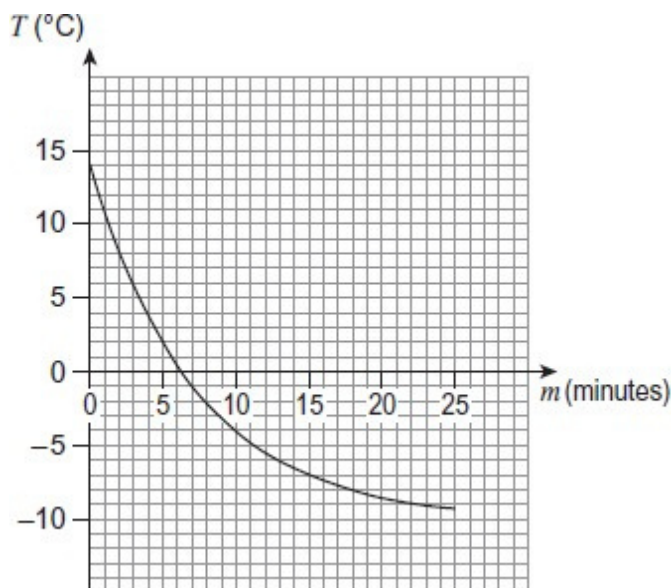
Answer \_\_\_\_\_ m/s<sup>2</sup>

(3)

(Total 7 marks)

Q5.

The graph shows the temperature,  $T$  (°C) of bread,  $m$  (minutes) after it is placed in a freezer.



(a) How many minutes does it take for the temperature to reach 0 °C?

Answer \_\_\_\_\_ min

(1)

(b) Estimate the rate at which the temperature is decreasing when  $m = 3$   
 You must show your working.

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Answer \_\_\_\_\_ °C per minute

(3)

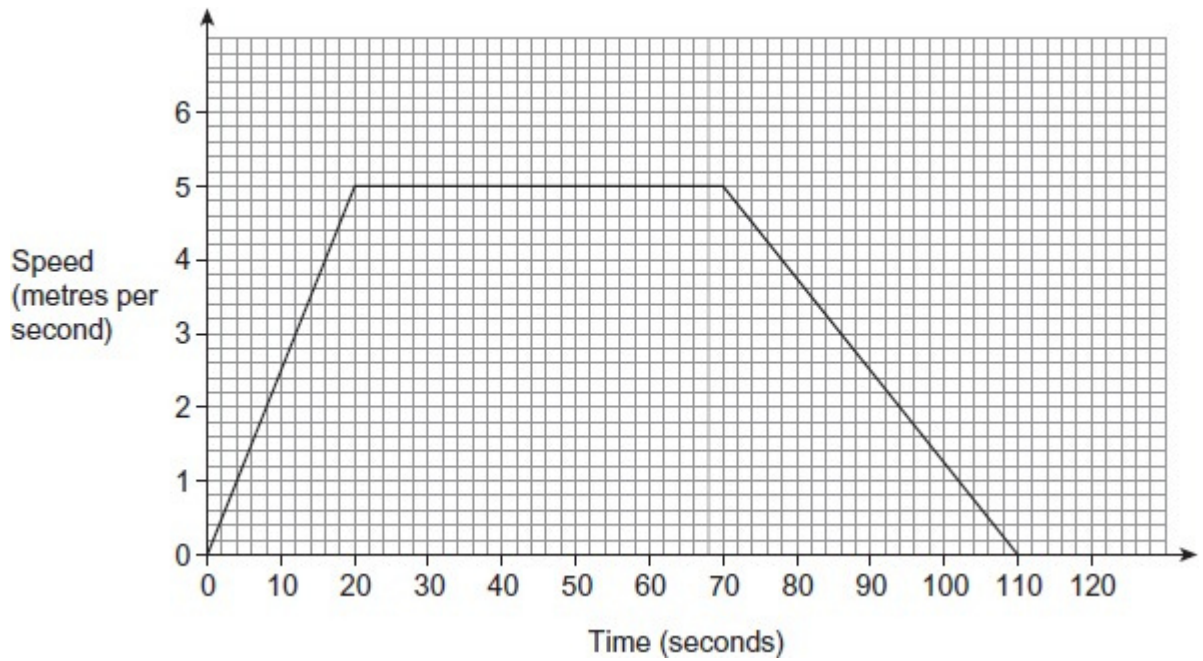
(Total 4 marks)

Q6.

The distance around a cycle track is 400 metres.

Robin cycles on the track.

Here is his speed-time graph.



(a) Show that Robin cycles exactly once around the track in 110 seconds.

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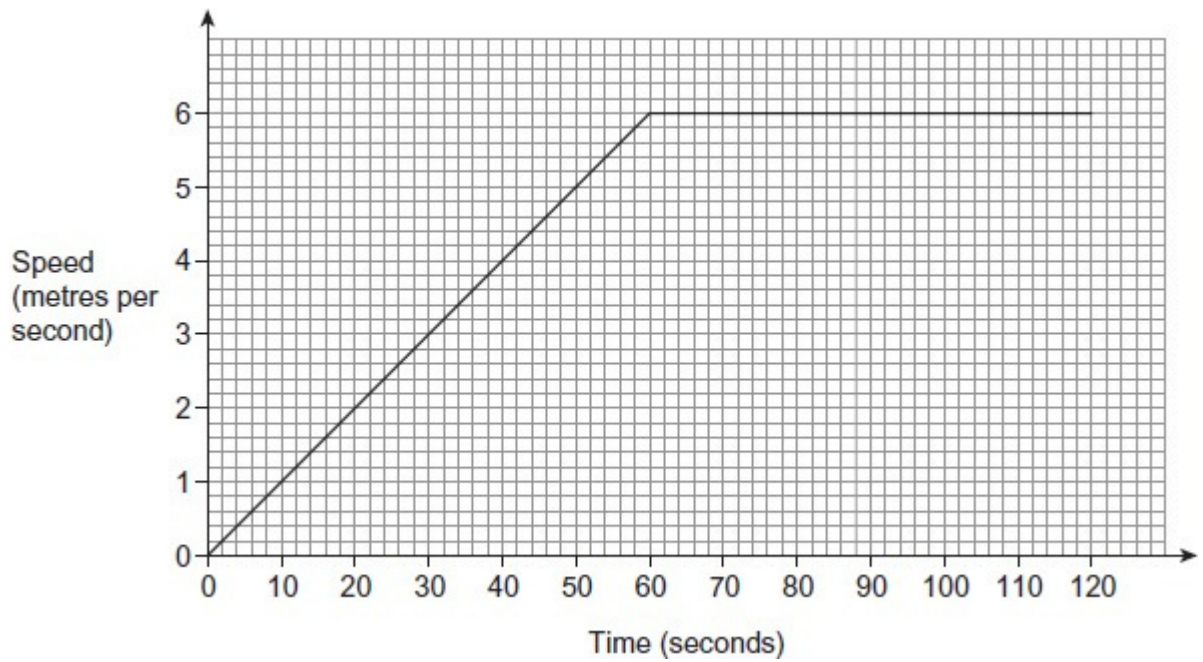
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(2)

(b) Sanjay cycles on the same track.

Here is his speed-time graph.



Does Sanjay cycle the first 400 metres in a quicker time than Robin?

You must show your working.

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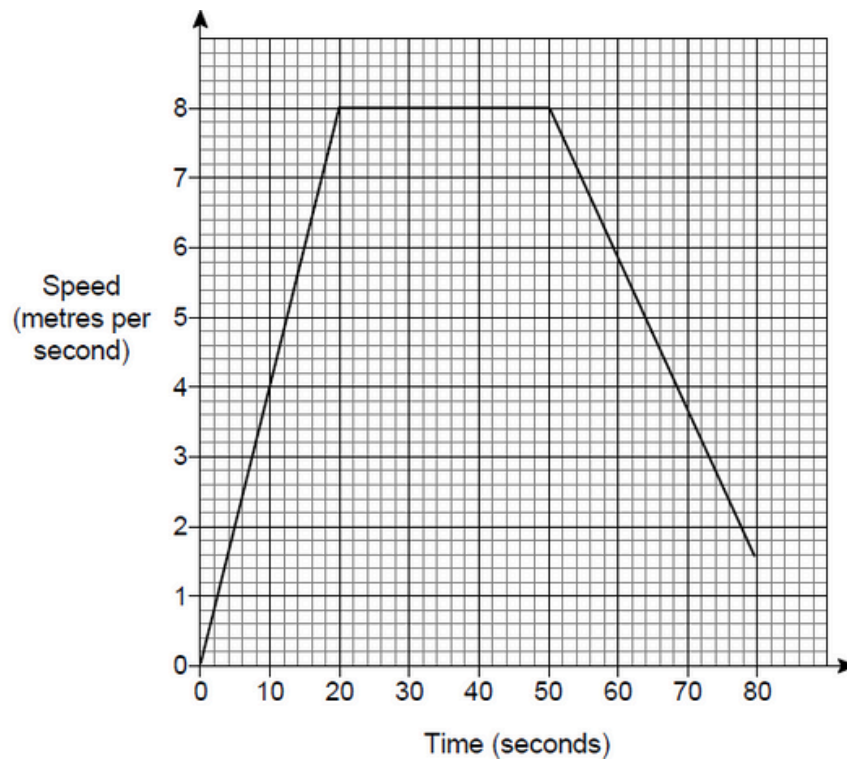
(3)  
(Total 5 marks)



Q7.

Amina and Ben had a cycle race.

Here is Amina's speed-time graph from the start of the race.



The distance of the race was 400 metres. Ben cycled the 400 metres in 64 seconds. Who won the race? You must show your working.

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Answer \_\_\_\_\_

(Total 4 marks)