Surname	
Other Names	
Candidate's Signature	

GCSE 9 - 1 Questions

Speed Distance Time Graphs 2

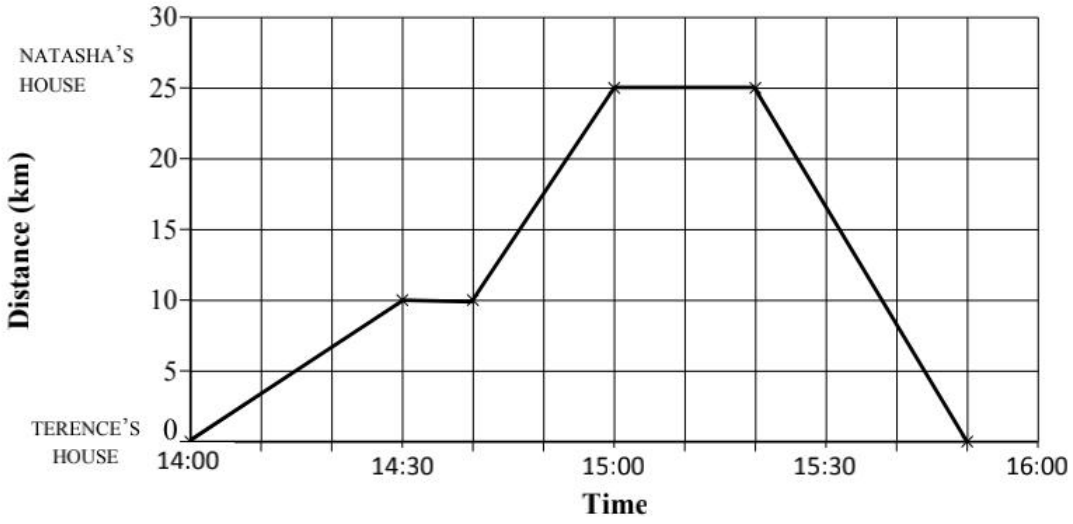
Calculator Allowed

INSTRUCTIONS TO CANDIDATES

- Write your name in the space provided.
- Write your answers in the spaces provided in this question paper.
- Answer ALL questions.
- Any working should be clearly shown in the spaces provided since marks may be awarded for partially correct solutions.
- You should have a ruler, compass and protractor where required.

Total Marks :

1) The graph shows Terence's journey from his house to Natasha's house, **picking up his friend Silvio on the way**, and their journey back to Terence's house.



a) What is the distance between Terence's house and Silvio's house?

Ans: _____ km

b) For how long did Terence stop at Natasha's house?

Ans: _____ min

c) Terence left his house at 14:00. At what time was he back home?

Ans: _____

d) How long did the **return** journey take? Give your answer in hours.

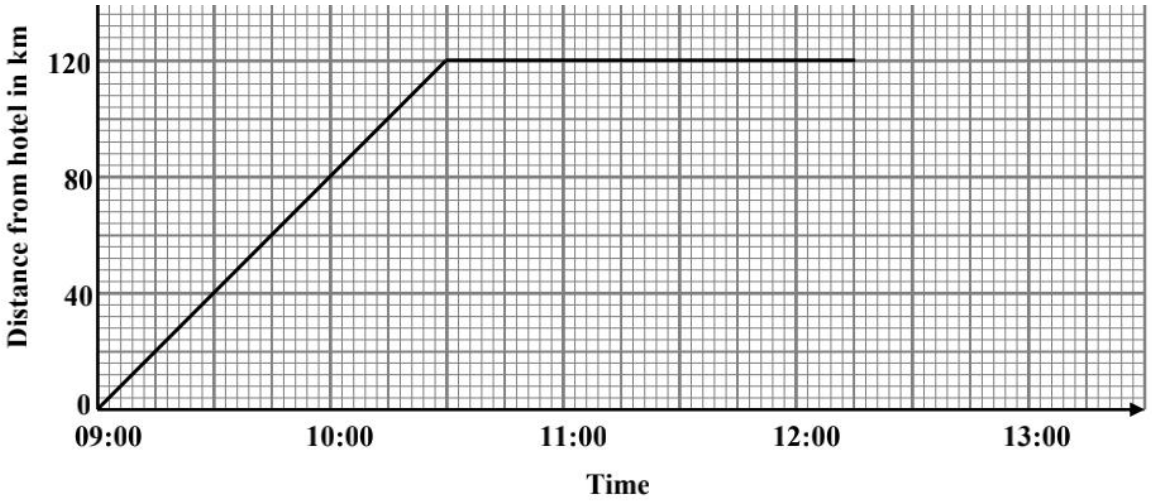
Ans: _____ hours

e) Calculate the speed of the **return** journey in km/h.

Ans: _____ km/h

[6 marks]

2) The distance-time graph below, represents a journey by coach from a hotel to a park. The coach leaves the hotel at 09:00. It arrived at the park and stopped for some time. It then returned to the hotel.



a) How long did the coach take to arrive at the park?

Ans. _____

b) At what speed did the coach travel from the hotel to the park?

Ans. _____km/h

c) At what time did the coach start its return journey?

Ans. _____

d) On its return journey, the coach travelled at 96 km/h. How long did the return journey take?

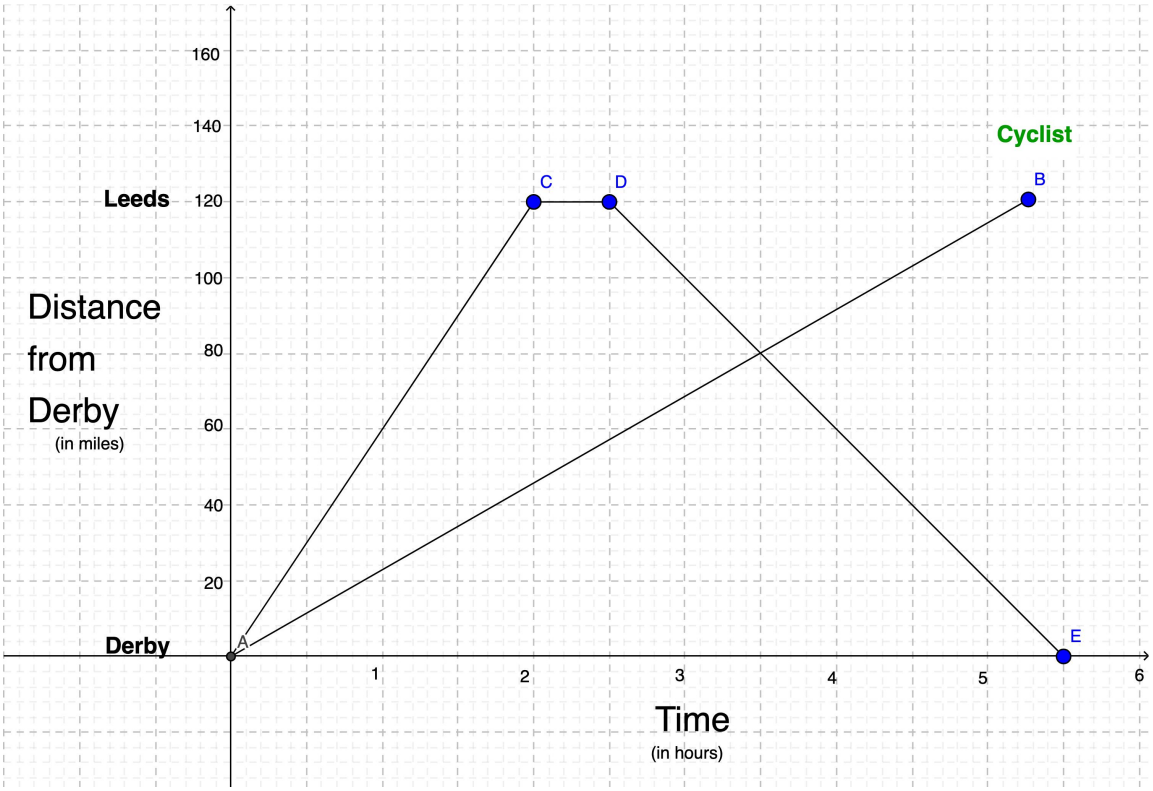
Ans. _____

e) At what time did the coach arrive back at the hotel?

Ans. _____

(8 marks)

3) The graph shows the journey of a lorry from Derby to Leeds and back (ACDE). It also shows the journey of a cyclist from Derby to Leeds (AB).



a) What is the distance between Derby and Leeds?

Answer .....km [1]

b) How long does the lorry take for the **whole** journey?

Answer .....hours [1]

c) For how long did the lorry driver stop at Leeds?

Answer .....minutes [1]

d) What was the speed of the lorry travelling from Leeds to Derby?

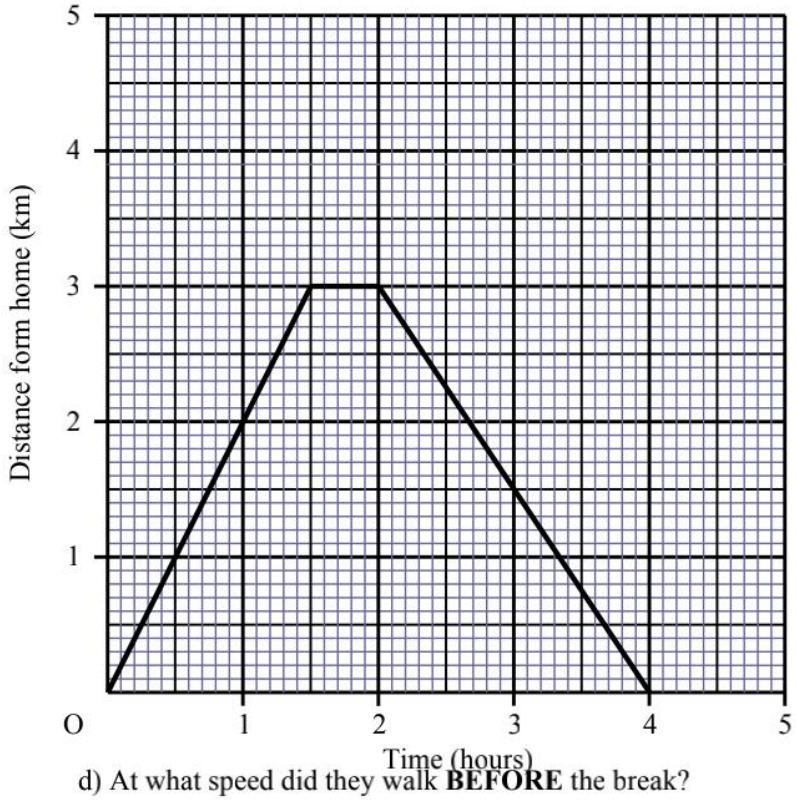
Answer .....km/h [2]

e) How long and how far into the cyclist's journey did the cyclist meet the lorry?

Duration..... Where: .....km from..... [2]

4) Miriam and Ronald went for a walk. During the walk they stopped for a short break.

The graph below shows their journey. Use the graph to answer these questions:



a) How long did their walk take?

Ans: _____

b) How many kilometres did they walk in all?

Ans: _____

c) How long was their **break**?

Ans: _____

d) At what speed did they walk **BEFORE** the break?

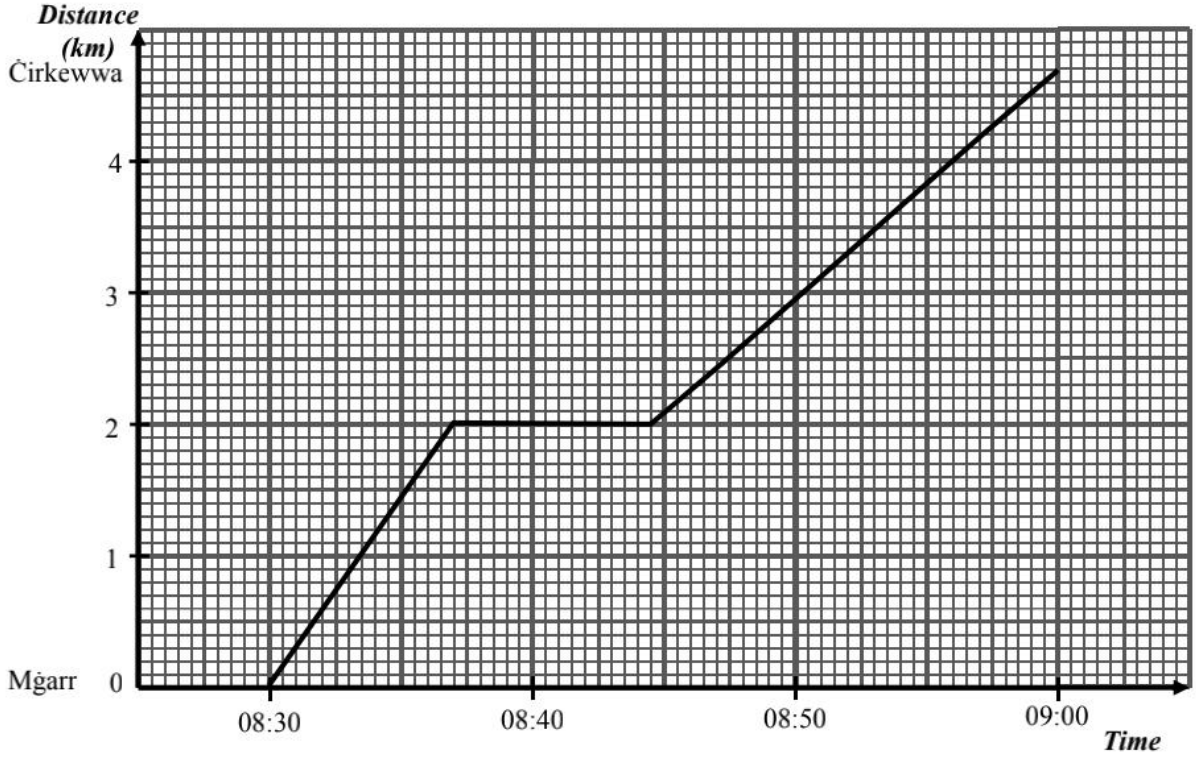
Ans: _____

e) What was their average speed for the **whole** walk, including the break?

Ans: _____

9 marks

5) The graph represents the journey of the slow Gozo ferry from Mġarr to Ċirkewwa.



a) What is the distance between Mġarr and Ċirkewwa?

Ans_____km

b) What was the speed of the ferry in the first 7 minutes? Give your answer in km/min, correct to 2 significant figures.

Ans_____km/min

c) For how long did the ferry stop moving?

Ans_____min

d) A boat departed from Mġarr at 08:34 and reached Ċirkewwa at 09:00. It travelled at constant speed without stopping.

i) On the grid above, draw a graph representing the boat's journey.

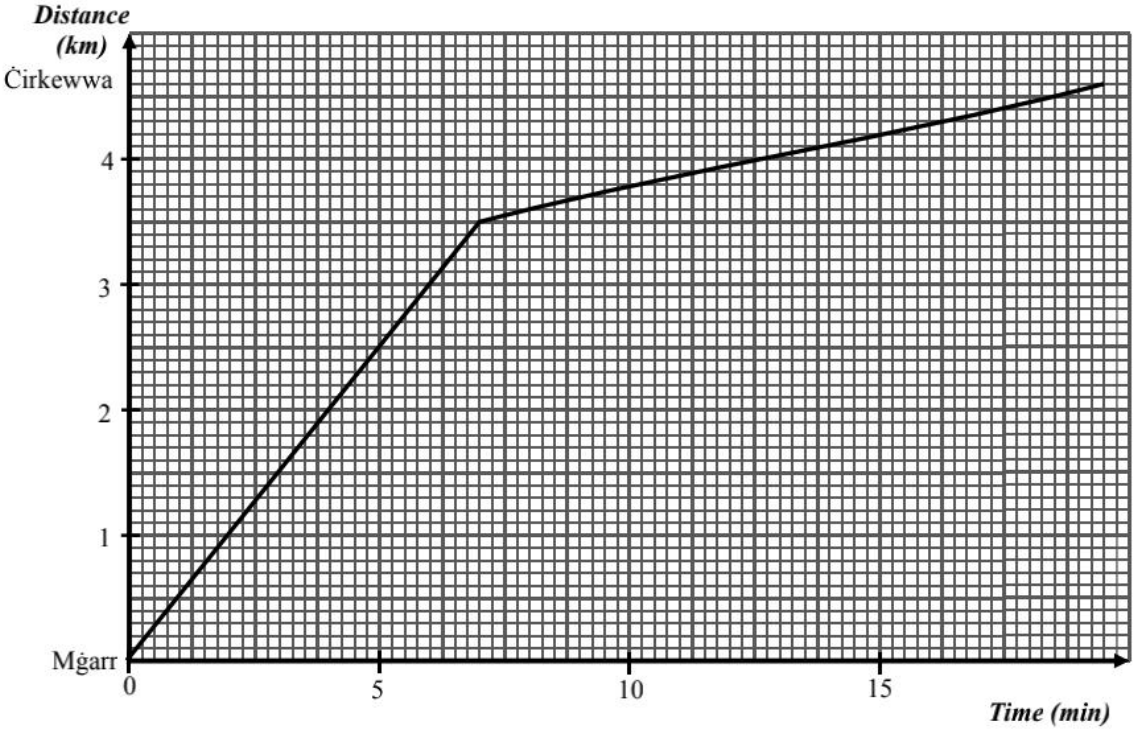
ii) At 08:36, was the boat moving faster, slower or at the same speed as the ferry? Explain.

_____

_____

(7 marks)

6) The graph represents the journey of the fast Gozo ferry from Mġarr to Ċirkewwa.



a) What is the distance between Mġarr and Ċirkewwa?

Ans_____km

b) What is the speed of the ferry in the first 7 minutes? Give your answer in km/min.

Ans_____km/min

c) A boat left Mġarr at the same time as the ferry. It travelled at constant speed and reached Ċirkewwa after 15 minutes.

i) On the grid above, draw a graph representing the boat's journey.

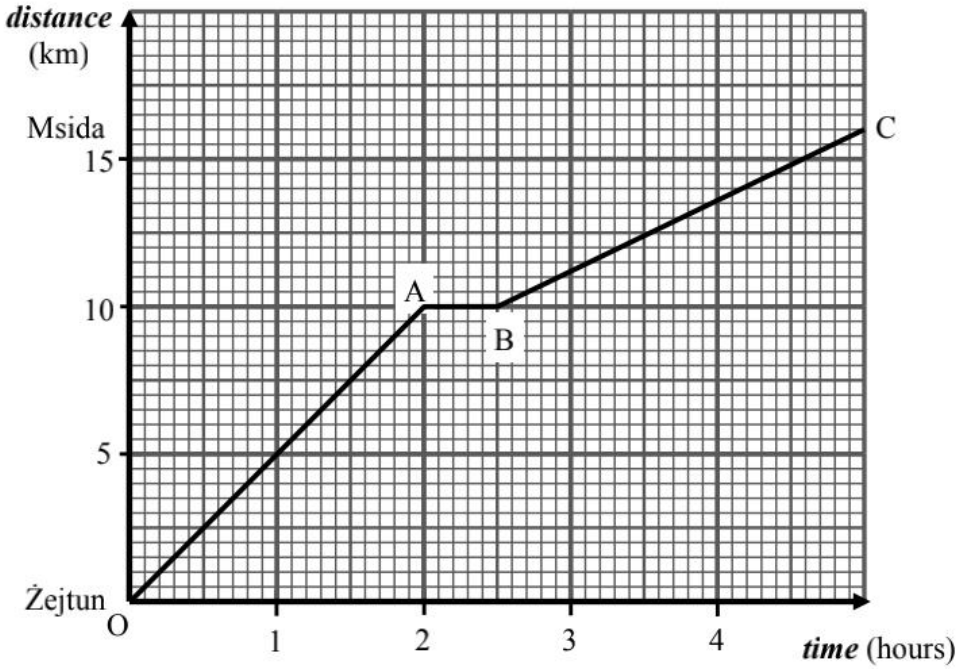
ii) On the 5th minute, was the boat moving faster, slower or at the same speed as the ferry? Explain.

_____

_____

(6 marks)

7) The graph shows the journey of a group of friends walking from Żejtun to Msida. On their way, they stop to have a break.



a) The distance from Żejtun to Msida is _____ km.

b) The break is _____ minutes long.

c) In which part of the journey is the speed the fastest: OA, AB or BC? Explain.

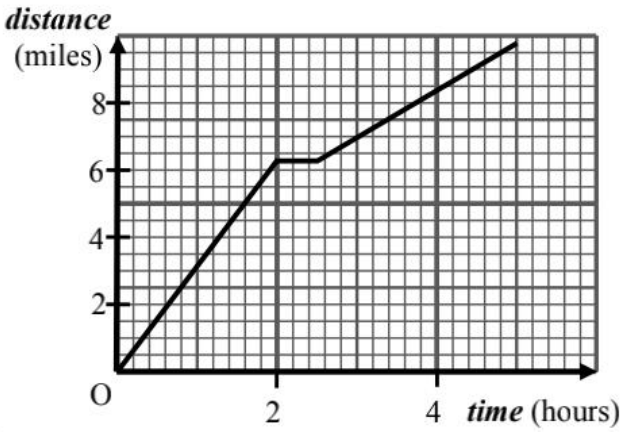
_____

d) Determine the speed during the part represented by **BC**.

Ans:_____ km/h

e) The graph on the right shows the same journey.
The distance is given in **miles**.

Calculate the value of 1 mile in kilometres.



Ans: 1 mile = _____km

(9 marks)

8) The travel graph below shows the journey made by a cyclist from A to B and back. Use the graph to answer the following:

a) Find the speed from A to B. Include the correct units.

Answer .....[2]

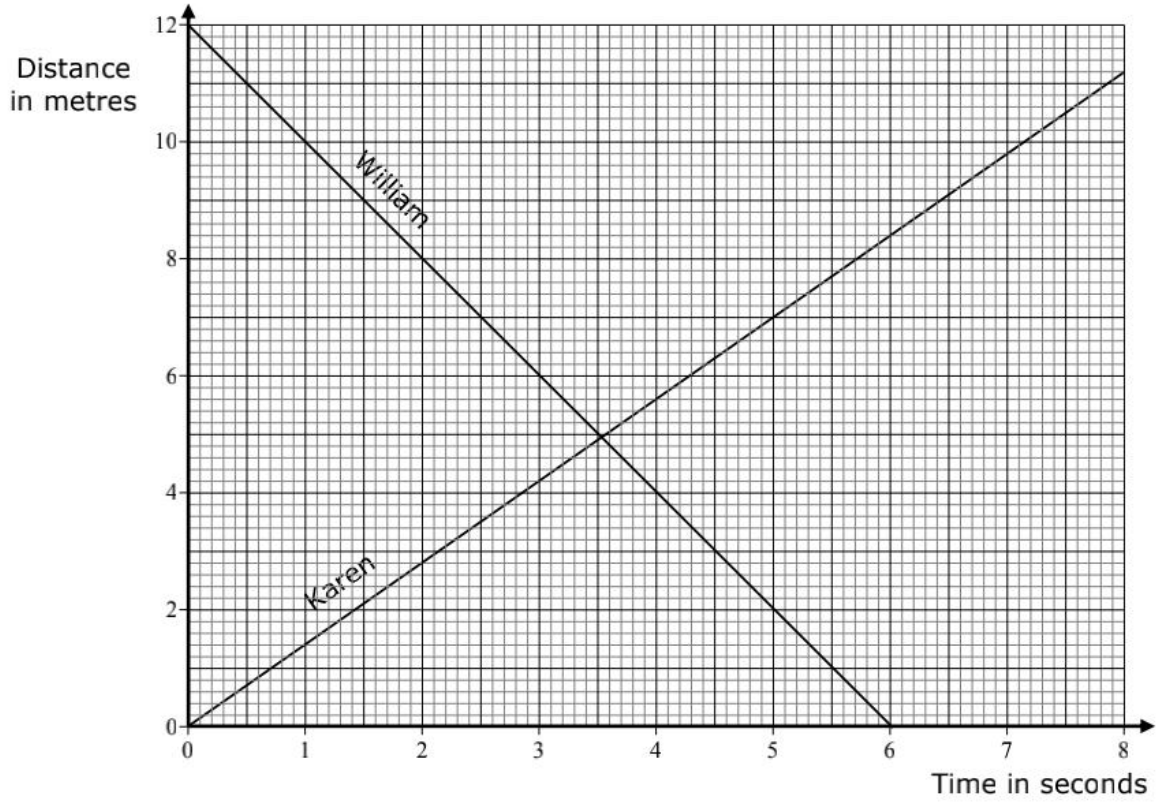
b) Calculate the cyclist's speed from B to A.Include the correct units.

Answer .....[2]

c) How long did the cyclist rest at B before returning to A?

Answer .....minutes [1]

9) William and Karen stand at a distance apart. They walk at a steady pace towards each other. This is shown in the travel graph below.



(a) Calculate Karen's speed in m/s.

Ans: _____

(b) Who is walking at the slower speed? Give a reason for your answer.

Ans: _____

Reason: _____

(c) What distance did William walk in 4 seconds?

Ans: _____

(d) How far apart were William and Karen after the first 2 seconds?

Ans: _____

(e) After how many seconds did William and Karen cross each other?

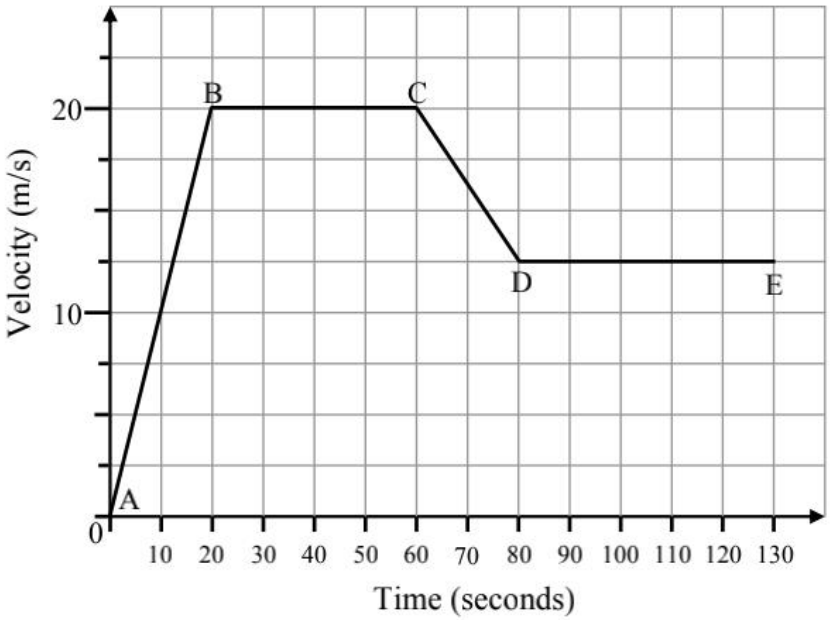
Ans: _____

(f) What is the total distance covered by Karen?

Ans: _____

(10 marks)

10) Patrick drives his car to work. He increases his velocity at a constant rate for the first 20 seconds (AB). He then travels at a steady velocity (BC).
He sees a speed camera sign which also shows a speed limit, so he slows down at a constant rate until he reaches a speed which is the **same** as the speed limit (CD).
He then continues driving at a steady velocity again (DE).
The diagram below shows Patrick's journey with corresponding line segments AB, BC, CD and DE.



(a) Write down the **maximum** velocity during the journey, in **m/s**.

Answer: _____**m/s**

(b) Work out how **far** Patrick travels while travelling at the maximum velocity. Give your answer in **metres**.

Answer: _____**m**

(c) What was the **speed limit** shown on the speed camera sign? Give your answer in **km/h and show all your working**.

Answer: _____ **km/h**

(d) Work out the **gradient** of line segment AB. **Explain** what the gradient of AB represents.

Answer: gradient = _____

(8 marks)

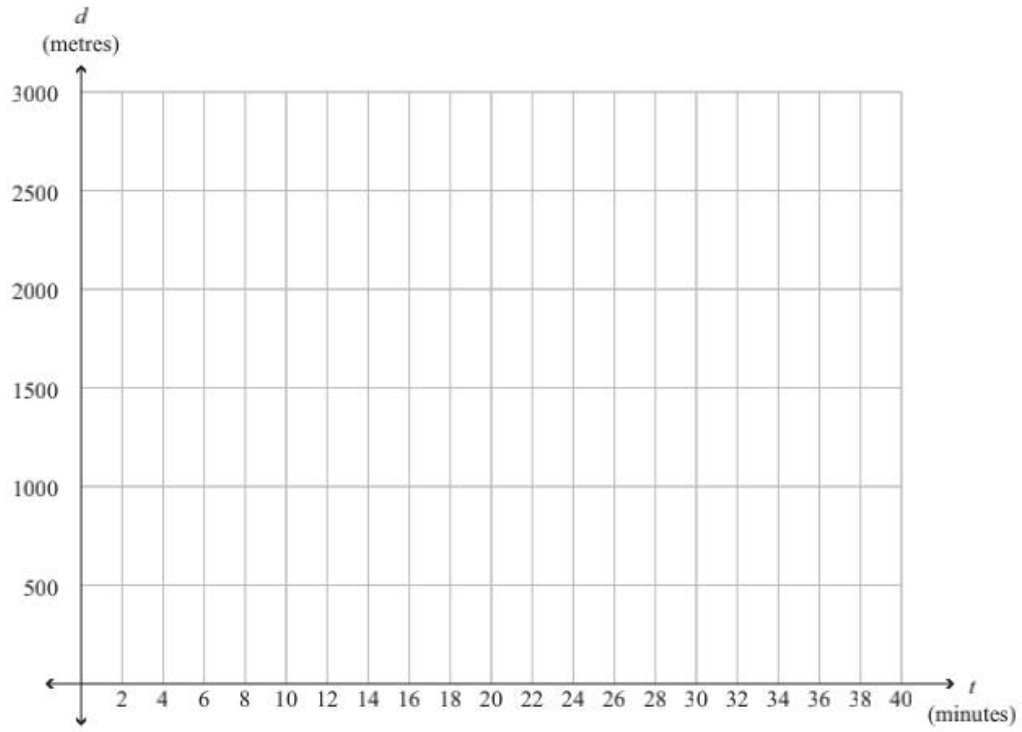
11) (a) Susie rides her bike to her friend's house at a constant speed.

They then walk to school together at a constant speed.

The distance that Susie is from school is given in the table below

Susie	Time *t* since leaving home in minutes	Distance *d* from school in metres
Leaves home		2500
Arrives at friend's house	2	2000
Leaves friend's house	15	2000
Arrives at school	35	

On the axis below, draw the graph of the distance, d, that Susie is from school at any time, t minutes after leaving home.



[3]

(b) James takes 40 minutes to jog the 5 km from his home to school.

(i) What is James's average speed when he is jogging from his home to school?

[2]

(ii) Emma lives further away from the school than James.

They leave their homes at the same time.

Emma rides her bike to school, and James jogs to school.

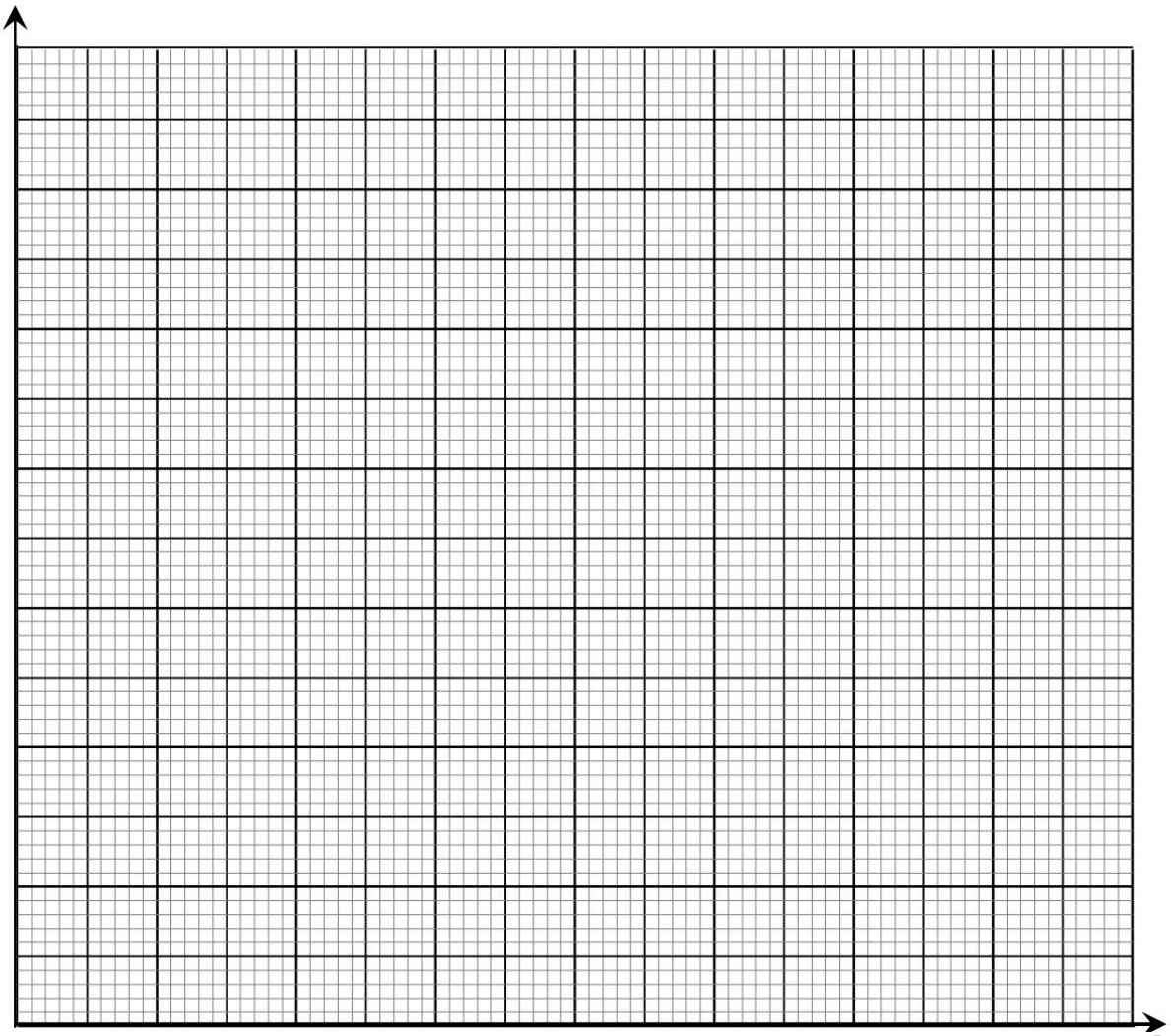
They meet 20 minutes after they leave their homes.

After they meet, both James and Emma change their travelling speeds so they are the same.

James begins running and Emma rides her bike at ¾ of the speed she had been travelling before they met.

They arrive at school 30 minutes after they left their homes.

Represent Emma and James's journeys from their homes on a graph.



[5]

(c) Describe Emma's and James's journeys to school, including their speeds and how far Emma's home is from the school.

[5]