Name: SOLUTIONS

GCSE (1 - 9)

Speed



Solutions by
Kenneth Stafford
MATHS TUTOR
ken@kennethstafford.co.uk

These questions are compiled from *released* Pearson Edexcel GCSE maths exam papers
They contain exam questions from up until the ***Summer 2023*** exam series
More recent exam papers do exist but are withheld for mock exams
As new exam papers are released these worksheets will gradually be updated
The ***most current*** version of these worksheets will always be available at: kennethstafford.co.uk

Question	Where the question appeared
1	Edexcel, GCSE, Autumn 2018, Paper 1F, Q24
2	Edexcel, GCSE, Autumn 2018, Paper 3F, Q24
3	Edexcel, GCSE, Autumn 2019, Paper 1F, Q16
4	Edexcel, GCSE, Autumn 2019, Paper 3F, Q27
5	Edexcel, GCSE, Autumn 2020, Paper 3F, Q24
6	Edexcel, GCSE, Summer 2017, Paper 2F, Q20
7	Edexcel, GCSE, Summer 2018, Paper 1F, Q22
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10	Edexcel, GCSE, Summer 2021, Paper 2F, Q23
11	Edexcel, GCSE, Summer 2023, Paper 2F, Q16
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14	Edexcel, GCSE, Summer 2022, Paper 3F, Q27

1

A plane travels at a speed of 213 miles per hour.

(a) Work out an estimate for the number of seconds the plane takes to travel 1 mile.

213 miles = 1 hour = 60 minutes

≈ 200 miles = 60 minutes

20 miles = 6 minutes

10 miles = 3 minutes = 180 seconds

1 mile = 18 seconds.

18 seconds

(3)

(b) Is your answer to part (a) an underestimate or an overestimate?
Give a reason for your answer.

Overestimate. The plane is actually travelling faster (I rounded 213 down to 200).

The plane will actually travel a mile in less than 18 seconds.

(1)

(Total for Question 24 is 4 marks)

[Edexcel, GCSE, Autumn 2018, Paper 1F, Q24]

2

Lara is a skier.

She completed a ski race in 1 minute 54 seconds.
The race was 475 m in length.

Lara assumes that her average speed is the same for each race.

(a) Using this assumption, work out how long Lara should take to complete a 700 m race.
Give your answer in minutes and seconds.

475m = 1 minute 54 seconds = 114 seconds

÷4.75: 475m = 114 seconds

÷4.75: 100m = 24 seconds

x7: 700m = 168 seconds = 2 minutes 48 seconds

2 minutes 48 seconds

(3)

Lara's average speed actually increases the further she goes.

(b) How does this affect your answer to part (a)?

As she is travelling faster it will take her less time.

(1)

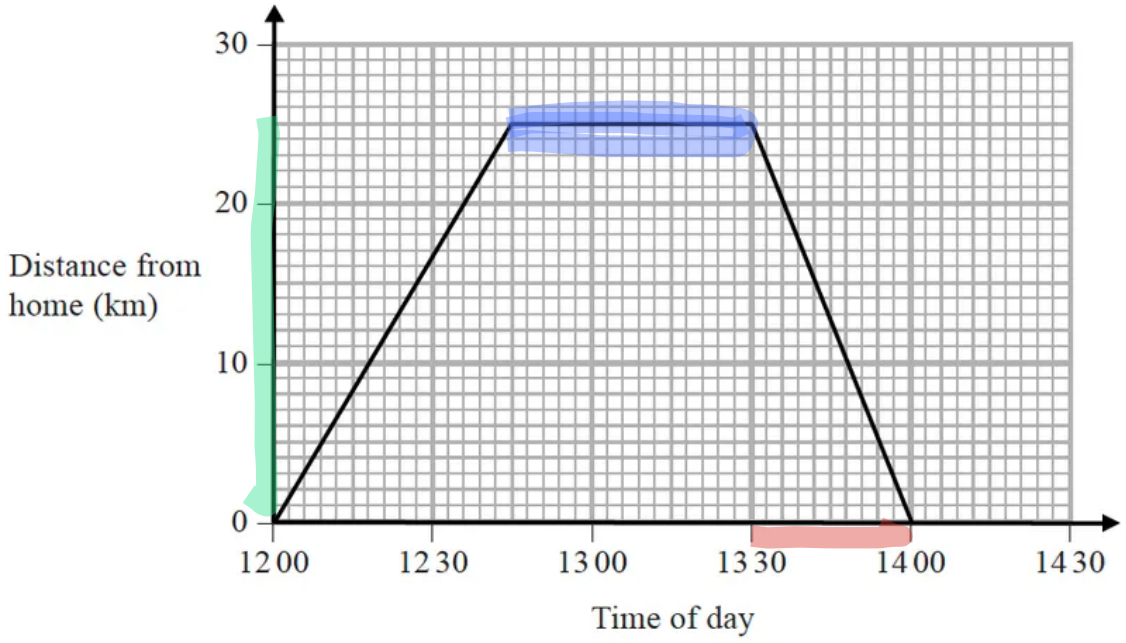
(Total for Question 24 is 4 marks)

[Edexcel, GCSE, Autumn 2018, Paper 3F, Q24]

3

Steve drove from his home to his friend's house.
He stayed at his friend's house and then drove home.

Here is Steve's travel graph.



(a) For how many minutes did Steve stay at his friend's house?

45 minutes

(1)

(b) What was Steve's average speed on his journey home?

30 mins = 25 km

1 hour = 50 km

50 km/h

(2)

(Total for Question 16 is 3 marks)

[Edexcel, GCSE, Autumn 2019, Paper 1F, Q16]

4

Nimer was driving to a hotel.
He looked at his Sat Nav at 13 30

Time	13 30
Distance to destination	65 miles

Nimer arrived at the hotel at 14 48

Work out the average speed of the car from 13 30 to 14 48
You must show all your working.

13:30 to 14:48 is 78 minutes

Speed = $\frac{\text{distance}}{\text{time}} = \frac{65}{78} = 0.83$ miles per minute

$0.83 \times 60 = 50$ mph

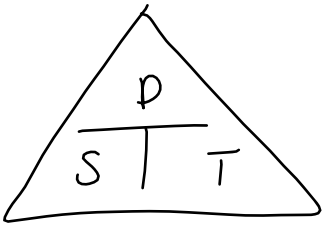
(Total for Question 27 is 4 marks)

[Edexcel, GCSE, Autumn 2019, Paper 3F, Q27]

5

Andy cycles a distance of 30 km at an average speed of 24 km/h.
He then runs a distance of 12 km at an average speed of 8 km/h.

Work out the total time Andy takes.
Give your answer in hours and minutes.



Cycle: $\text{time} = \frac{\text{distance}}{\text{speed}} = \frac{30}{24} = 1.25 \text{ hours} = 1\text{h } 15\text{mins}$

Run: $\text{time} = \frac{\text{distance}}{\text{speed}} = \frac{12}{8} = 1.5 \text{ hours} = 1\text{h } 30\text{mins}$

Total:

$$\begin{array}{r} 1\text{h } 15\text{ min} \\ 1\text{h } 30\text{ min} \\ \hline 2\text{h } 45\text{ min} \end{array}$$

2 hours 45 minutes

(Total for Question 24 is 3 marks)

[Edexcel, GCSE, Autumn 2020, Paper 3F, Q24]

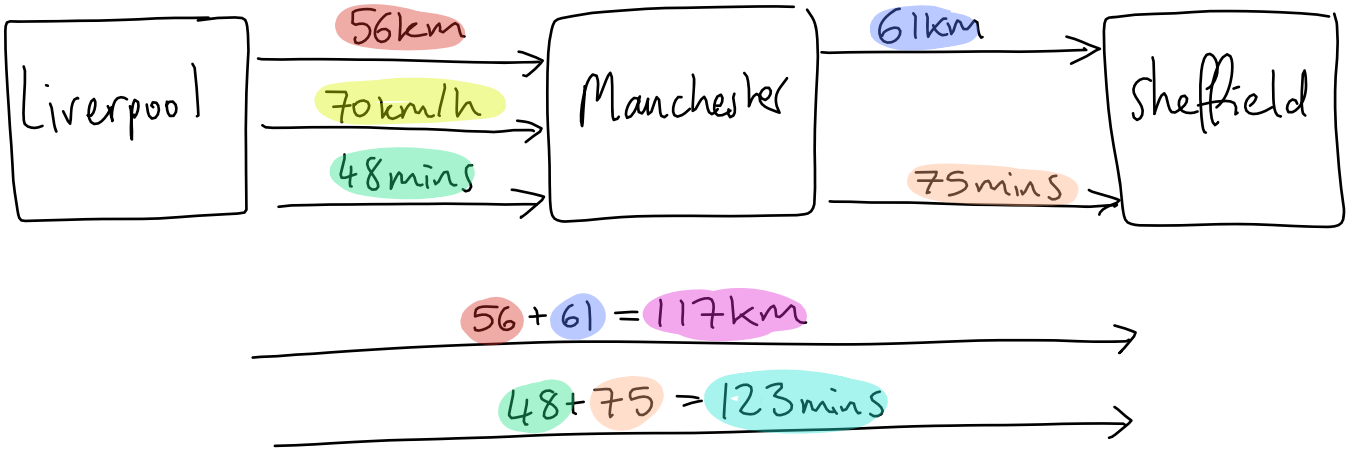
6

Olly drove 56 km from Liverpool to Manchester.
He then drove 61 km from Manchester to Sheffield.

Olly's average speed from Liverpool to Manchester was 70 km/h.
Olly took 75 minutes to drive from Manchester to Sheffield.

(a) Work out Olly's average speed for his total drive from Liverpool to Sheffield.

56 ÷ 70 = 0·8 hours = 48mins



$$\text{Speed} = \frac{117}{123} \times 60 = 57.1$$

57·1 km/h

(4)

Janie drove from Barnsley to York.

Janie's average speed from Barnsley to Leeds was 80 km/h.
Her average speed from Leeds to York was 60 km/h.

Janie says that the average speed from Barnsley to York can be found by working out the mean of 80 km/h and 60 km/h.

(b) If Janie is correct, what does this tell you about the two parts of Janie's journey?

That the journeys are the same distance.

(1)

(Total for Question 20 is 5 marks)

[Edexcel, GCSE, Summer 2017, Paper 2F, Q20]

7

A cycle race across America is 3069.25 miles in length.

Juan knows his average speed for his previous races is 15.12 miles per hour.
For the next race across America he will cycle for 8 hours per day.

(a) Estimate how many days Juan will take to complete the race.

8 hours @ 15 mph = 120 miles per day

$\frac{3000}{120} = \frac{300}{12} = \frac{150}{6} = \frac{75}{3} = 25$ days

25

(3)

Juan trains for the race.
The average speed he can cycle at increases.
It is now 16.27 miles per hour.

(b) How does this affect your answer to part (a)?

He is travelling faster so it will take him less time.
Although it my estimate may not be affected if I round 16.27 to 15.

(1)

(Total for Question 22 is 4 marks)

[Edexcel, GCSE, Summer 2018, Paper 1F, Q22]

8

Emily drives 186 miles in 3 hours.

(a) What is her average speed?

$$\text{speed} = \frac{\text{distance}}{\text{time}} = \frac{186}{3} = 62$$

62 ..... mph

(2)

Sarah drives at an average speed of 58 mph for 4 hours.

(b) How many miles does Sarah drive?

$$\text{distance} = \text{speed} \times \text{time}$$
$$= 58 \times 4$$
$$= 232$$

232 ..... miles

(2)

(Total for Question 9 is 4 marks)

[Edexcel, GCSE, Summer 2018, Paper 2F, Q9]

9

Ruth left her home at 9 am and walked to the library.
She got to the library at 10 30 am.
Ruth walked at a speed of 4 mph.

(a) Work out the distance Ruth walked.

Time = 90 mins = 1.5 hours

Speed = 4 mph

Distance = $1.5 \times 4 = 6$

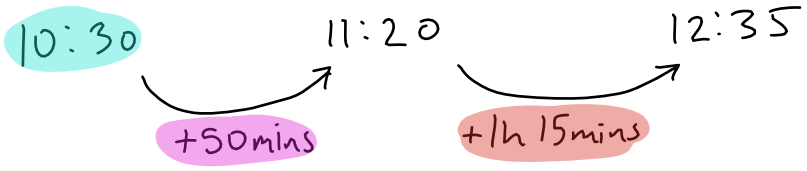
6 ..... miles

(2)

Ruth got to the library at 10 30 am.
She stayed at the library for 50 minutes.
Then she walked home.

Ruth took $1\frac{1}{4}$ hours to walk home.

(b) At what time did Ruth get home?



12:35pm .....

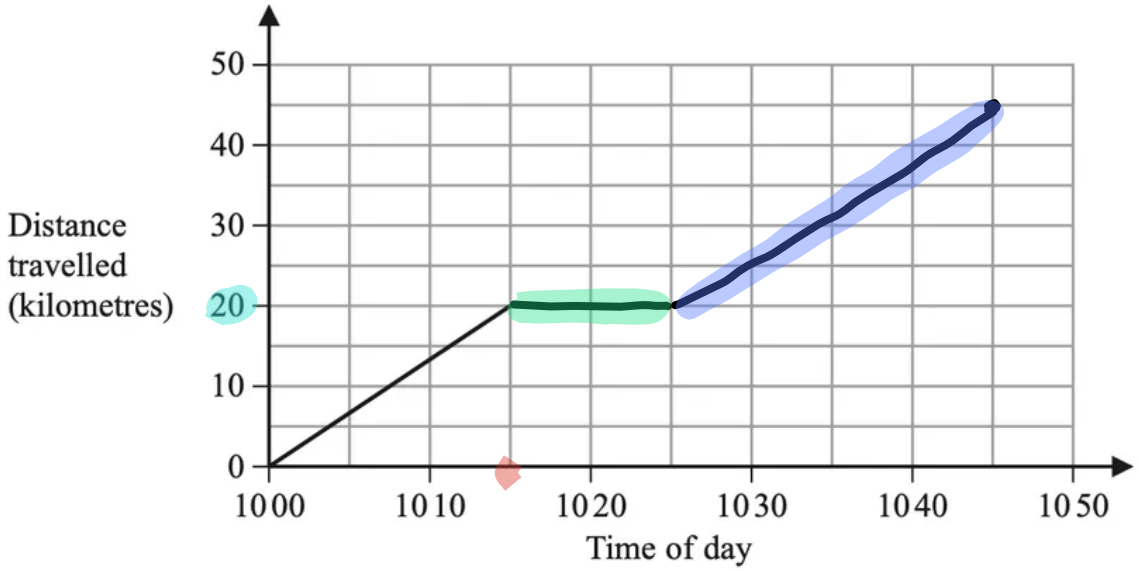
(2)

(Total for Question 9 is 4 marks)

[Edexcel, GCSE, Summer 2019, Paper 1F, Q9]

10

Sam drives his car on a journey.
Here is the travel graph for the first 15 minutes of his journey.



(a) Work out Sam's speed, in km/h, for the first 15 minutes of his journey.

15mins = 20km

60mins = 80km

80 km/h

(2)

At 1015 Sam stops for 10 minutes and then drives for 20 minutes at a speed of 75 km/h.

(b) On the grid, complete the travel graph for Sam's journey.

60mins = 75km

20mins = 25km

(3)

(Total for Question 23 is 5 marks)

[Edexcel, GCSE, Summer 2021, Paper 2F, Q23]

11

Paulo drives at an average speed of 56 km/h for 1 hour 45 minutes.

Work out the distance Paulo drives.

1 hour = 56 km

30 mins = 28 km

+ 15 mins = 14 km

1 h 45 mins = 98 km

or $56 \times 1.75 = 98$

98 km

(Total for Question 16 is 3 marks)

[Edexcel, GCSE, Summer 2023, Paper 2F, Q16]

12

Jenny drives from London to Swindon at an average speed of 54 miles per hour.

She drives for $1\frac{1}{2}$ hours. 1.5 hours

(a) Work out the distance from London to Swindon.

1.5 × 54 = 81

..... miles

(2)

Aleksy is using a map.

The map has a scale of 1 : 25 000

On the map a road has a length of 6 cm.

(b) Work out the length, in kilometres, of the real road.

6 × 25,000 = 150,000 cm

= 1500 m

= 1.5 km

1.5 kilometres

(3)

(Total for Question 14 is 5 marks)

[Edexcel, GCSE, November 2022, Paper 1F, Q14]

13

Savio leaves his home at 07 30 to drive to work.

He drives a distance of 50 miles.

Savio thinks he drives at an average speed of 40 miles per hour.

(a) If Savio is correct, at what time will he arrive at work?

1 hour = 40 miles

15 mins = 10 miles

1h 15 mins = 50 miles

07:30 + 1h 15mins = 08:45

(3)

In fact, Savio's average speed was greater than 40 miles per hour.

(b) How does this affect your answer to part (a)?

He will get there sooner.

(1)

(Total for Question 16 is 4 marks)

[Edexcel, GCSE, Summer 2022, Paper 1F, Q16]

14

Jessica runs for 15 minutes at an average speed of 6 miles per hour.
She then runs for 40 minutes at an average speed of 9 miles per hour.

It takes Amy 45 minutes to run the same total distance that Jessica runs.

Work out Amy's average speed.
Give your answer in miles per hour.

÷4 ↓ 60 mins = 6 miles
15 mins = 1.5 miles

÷3 ↓ 60 mins = 9 miles
20 mins = 3 miles
x2 ↓ 40 mins = 6 miles

1.5 + 6 = 7.5 miles

45 mins = 7.5 miles
15 mins = 2.5 miles
60 mins = 10 miles

10 ..... miles per hour

(Total for Question 27 is 4 marks)

[Edexcel, GCSE, Summer 2022, Paper 3F, Q27]