

Write your name here


Surname	Other names
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Pearson Edexcel
Functional Skills

Centre Number	Candidate Number																
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Mathematics

Level 2



19 – 23 March 2018	Paper Reference
Time: 1 hour 30 minutes	FSM02/01

You must have:
Pen, calculator, HB pencil, eraser, ruler graduated in cm and mm, protractor, compasses.

Total Marks

My signature confirms that I will not discuss the content of the test with anyone until the end of the 5 day test window.

Signature: _____

Instructions

- Use a **black** ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Sign the declaration.
- Answer **all** questions.
- Answer the questions in the spaces provided
– *there may be more space than you need.*
- **Calculators may be used.**

Information

- The total mark for this paper is 48.
- The marks for each question are shown in brackets
– *use this as a guide to how much time to spend on each question.*
- **You must show clearly how you get your answers because marks will be awarded for your working out.**
- **Check your working and your answers at each stage.**
- **This sign shows where marks will be awarded for showing your check.**



Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.

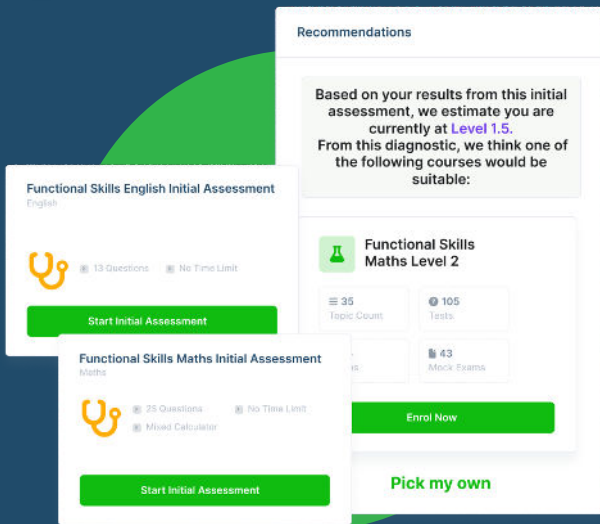
Turn over ►



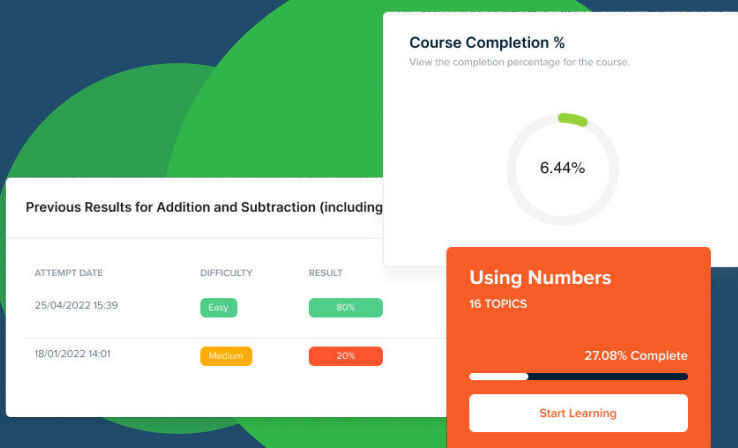
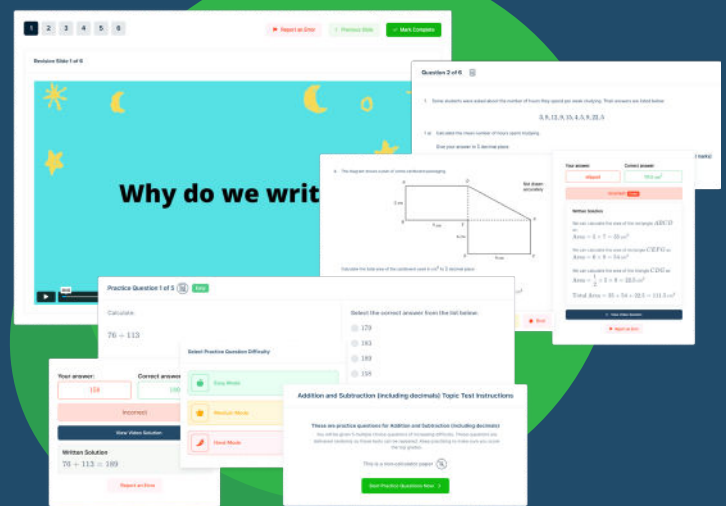


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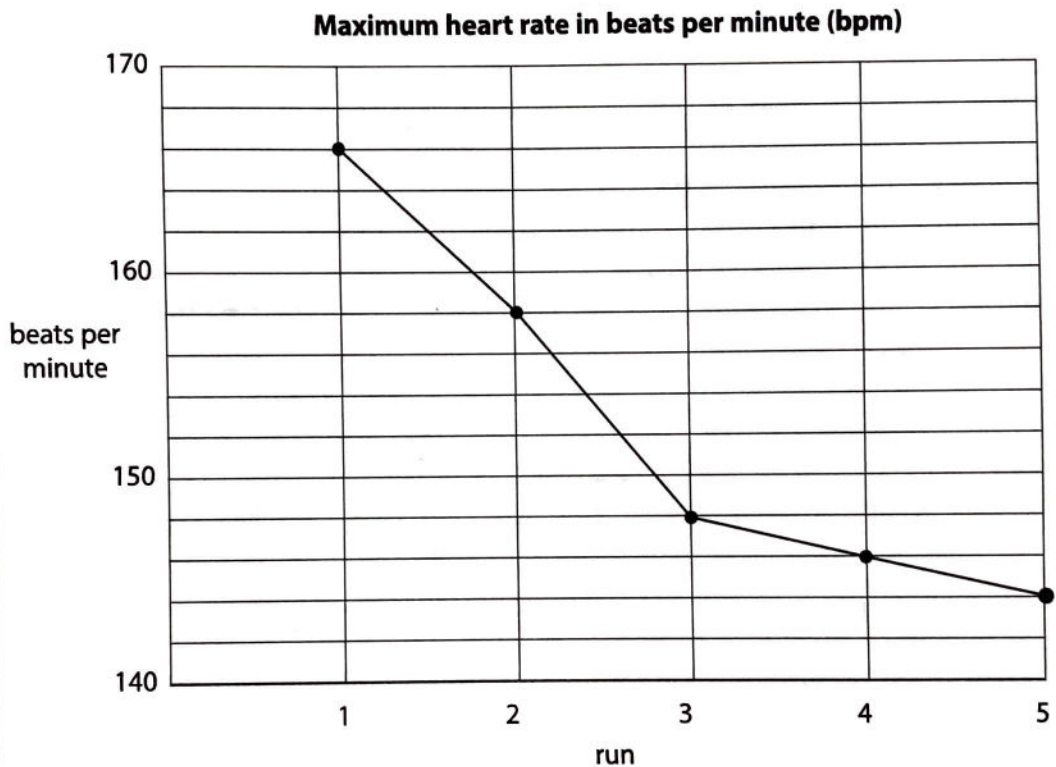
SECTION A: Fitness club**Answer all questions in this section.****Write your answers in the spaces provided.**

- 1 Bradley is a member of a fitness club.

He plans to take part in a race.

Bradley does some training runs to prepare for the race.

He has this information about his maximum heart rate during each run.



Bradley thinks his mean maximum heart rate is greater than 150 beats per minute.

Is Bradley correct?
Show a check of your working.

(4)

Use the box below to show clearly how you get your answer.

$$\frac{166 + 158 + 148 + 146 + 144}{5} = 152.4$$

Yes, he is correct.

Use the box below to show your check.



$$152.4 \times 5 = 762 = 166 + 158 + 148 + 146 + 144$$

(Total for Question 1 is 4 marks)

2 Bradley wants to buy a bike to help with his training.

He sees these two offers for the same make of bike.

Best Bikes

Normal price £499

Now $\frac{1}{8}$ off normal price

Top Cycles

Normal price £369.59

Plus VAT at 20%

Bradley wants to pay the least amount of money possible for the bike.

- (a) Which offer should he choose?
Show why you think this.

(4)

Use the box below to show clearly how you get your answer.

$$£499 \times (1 - \frac{1}{8}) = £499 \times \frac{7}{8} = £436.63$$

(Best Bikes)

$$£369.59 \times (1 + 0.2) = £369.59 \times 1.2 = £443.51$$

(Top Cycles).

He should choose the Best Bikes offer.

Bradley goes on a 25 km bike ride each week.

He wants to monitor his recovery heart rate.

Bradley records his recovery heart rate 10 minutes after each bike ride.

He has this information.

	Recovery heart rate (bpm)
ride 1	162
ride 7	135

Bradley thinks his recovery heart rate from ride 1 to ride 7 has decreased by $\frac{1}{5}$.

(b) Has his recovery heart rate decreased by $\frac{1}{5}$?

(3)

Use the box below to show clearly how you get your answer.

$$162 - 135 = 27.$$

$$\frac{27}{162} = \frac{1}{6} \text{ decrease} \approx 16.6\%$$

$$\frac{1}{5} = 20\%$$

No, he is incorrect.

(Total for Question 2 is 7 marks)

3 The probability of rain for the day of the race is 62%.

(a) What is the probability that it does **not** rain on the day of the race?

(2)

Use the box below to show clearly how you get your answer.

$$100 - 62 = 38 \%$$

Runners who complete the race in 2 hours 15 minutes or less get a gold medal.

Bradley completed the race in 2 hours 13 minutes 22 seconds.

- (b) Work out the difference between 2 hours 15 minutes and 2 hours 13 minutes 22 seconds.

(3)

Use the box below to show clearly how you get your answer.

$$\begin{aligned}60 \text{ seconds in a minute} &\rightarrow 2\text{h } 15\text{min} - 2\text{h } 13\text{min } 22\text{s} \\ &= 1\text{min} + (60 - 22)\text{sec} \\ &= 1\text{min } 38\text{sec}.\end{aligned}$$

(Total for Question 3 is 5 marks)

SECTION B: The house**Answer all questions in this section.****Write your answers in the spaces provided.**

- 4 Matt and Julia find a two bedroom house to rent.
Matt will have the bigger bedroom.

They have this information about the costs they need to pay between them before they can move in.

- Rent for 1 month £895
- Administration fee $0.7 \times$ monthly rent
- Deposit $1.25 \times$ monthly rent

Matt and Julia will split the total of these costs in the ratio 3 : 2

(a) How much does Matt have to pay before they move in?

(6)

Use the box below to show clearly how you get your answer.

$$£895 \times 0.7 = £626.50 \text{ (admin)}$$

$$£895 \times 1.25 = £1118.75 \text{ (deposit)}$$

$$£895 + £626.50 + £1118.75$$

$$= £2640.25 \text{ (total).}$$

$$3 + 2 = 5 \text{ parts.}$$

Matt:

$$\frac{3}{5} \times £2640.25 = £1584.15$$

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A large, empty rectangular box with a blue border, occupying most of the page. It is intended for the candidate to write their answer to the question. The box is completely blank and contains no text or markings.

Matt wants to buy some furniture for the house.
He borrows £3000 to pay for the furniture.
He needs to pay a borrowing fee.

Matt needs to repay the £3000 and the borrowing fee over 18 months.

He uses this formula to work out the amount of money he will repay each month.

$$R = \frac{A \times 1.034}{n}$$

R is the amount to repay each month (£).

A is the amount borrowed (£).

n is the number of months to pay the money back.

Matt thinks the amount he will need to repay each month is more than £170

- (b) Will he need to repay more than £170 each month?
Show a check of your working.

(4)

Use the box below to show clearly how you get your answer.

$$R = \frac{\pounds 3000 \times 1.034}{18}$$
$$= \pounds 172.33 \text{ per month.}$$

Yes, he will pay more than £170
per month.

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Use the box below to show your check.

$$\frac{172.33 \times 18}{1.034} = \text{£}3000$$

(Total for Question 4 is 10 marks)

- 5 The sketch shows the dimensions of the lounge floor.
All the corners in the room are right angles.

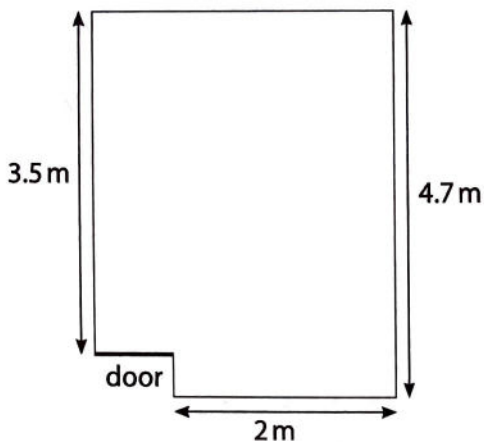


Diagram **not**
accurately drawn

The door is 1.25 m wide.

Julia wants to put string lighting in the lounge.
She wants the lights to go all the way around the room.
The lights will go above the height of the door.

Julia wants enough string lighting to cover at least $1\frac{1}{2}$ times the total distance around the room.

She thinks 25 metres of string lighting will be enough.

- (a) Is Julia correct?
Show why you think this.

(4)

Use the box below to show clearly how you get your answer.

$$2 + 1.25 + (4.7 - 3.5) + 3.5 + (2 + 1.25) + 4.7$$

$$= 15.9 \text{ m.}$$

$$\frac{25}{15.9} = 1.572.$$

Yes, she is correct.

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Julia has a large sofa that she wants to put in the lounge.
The sofa needs a rectangular space 175 cm by 125 cm.

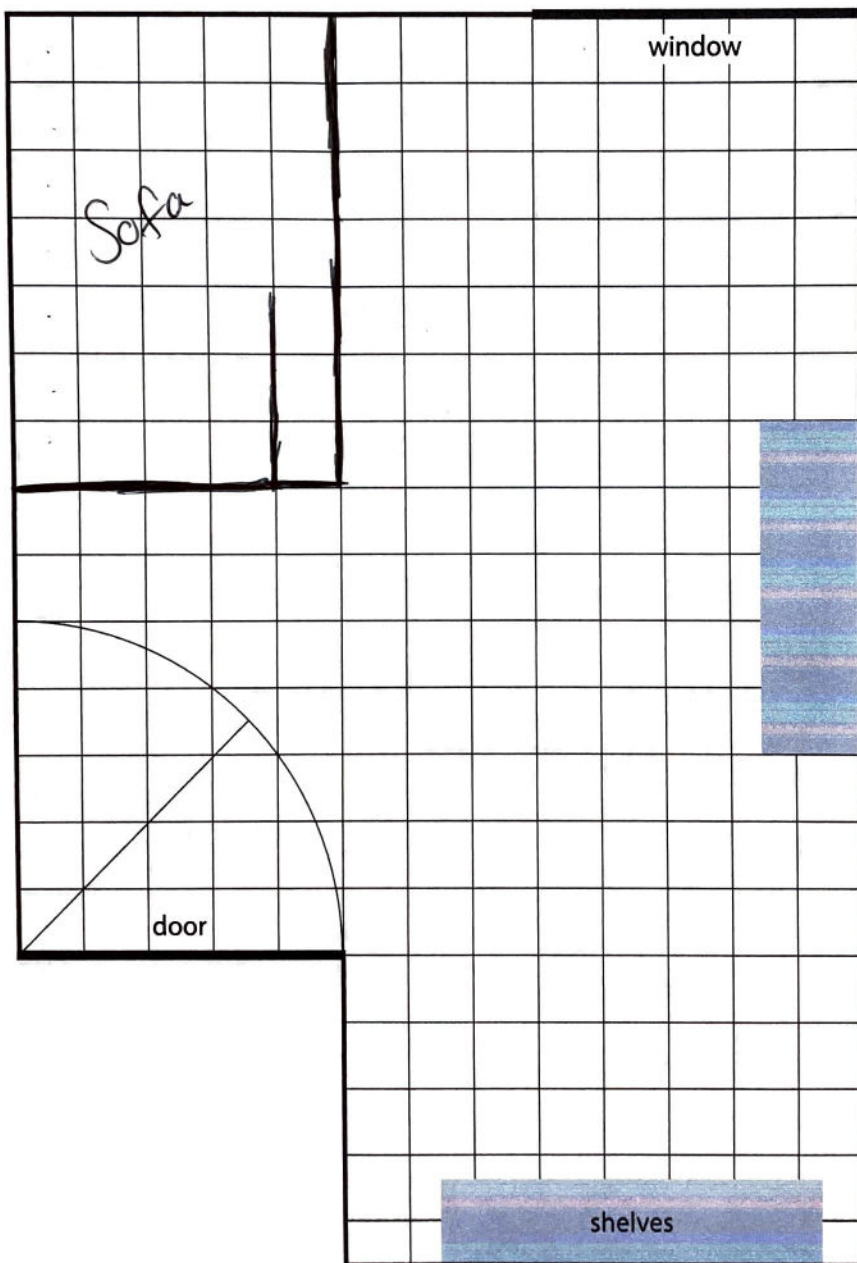
Julia wants the space for the sofa to have

- the longest side against a wall
- at least 25 cm from the door, the window, the shelves and the fireplace.

Julia has an accurate drawing of the floor of the lounge.

(b) Draw the space for the sofa on the grid below.
Remember to use the scale given.

(2)



scale 1 : 25

(Total for Question 5 is 6 marks)

SECTION C: Limousine hire

Answer all questions in this section.

Write your answers in the spaces provided.

- 6 Ellie is the manager of a limousine hire company.

This is a plan of the driveway.

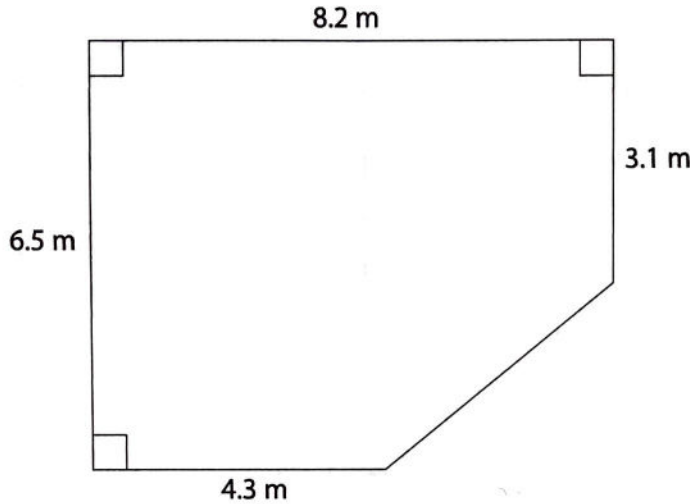


Diagram **not** accurately drawn

Ellie wants to cover the driveway with paving stones.
The paving stones can be cut to fit the space.

Ellie will buy the paving stones in packs.
Each pack covers an area of 4.51 m^2

What is the least number of packs of paving stones Ellie needs to buy?

(5)

Use the box below to show clearly how you get your answer.

$$8.2 \text{ m} \times 6.5 \text{ m} = 53.3 \text{ m}^2 \text{ (Rectangle)}$$

$$\frac{1}{2} [(6.5 - 3.1) \times (8.2 - 4.3)] = \frac{13.26 \text{ m}^2}{2} = 6.63 \text{ m}^2 \text{ (Missing Triangle)}$$

$$53.3 - 6.63 = 46.67 \text{ m}^2$$

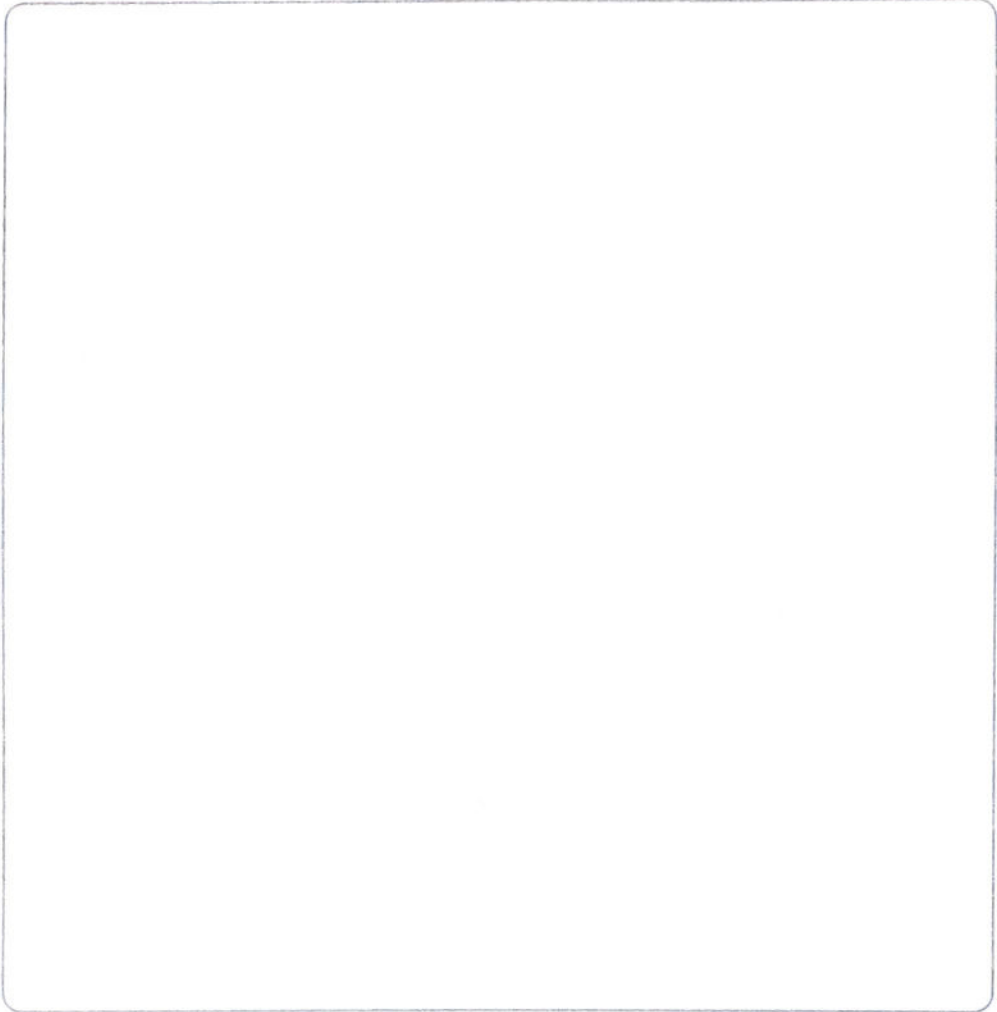
$$\frac{46.67}{4.51} = 10.35 \text{ packs} \rightarrow 11 \text{ packs needed.}$$

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(Total for Question 6 is 5 marks)

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7 Adnan, Fayez and Toni are the 3 drivers working on Saturday.

Ellie needs to complete a booking sheet for each driver.
Some bookings have already been made for Saturday.

Ellie needs to add these new bookings to the booking sheets.

Client	Time
Mr Harding	9 am to 12 pm
Barker family	9.30 am to 11 am
Mr and Mrs Khan	12 pm to 1.30 pm
Ms Singh	1 pm to 2.30 pm

Ellie needs to allow at least 45 minutes between each booking.

Complete the booking sheets for the drivers.

(3)

Use the booking sheets on the next page.

Driver: Adnan		Day: Saturday
Time	Client	
9am to 12pm	Magenty family	
1pm to 2:30pm	Ms Singh	

Driver: Fayez		Day: Saturday
Time	Client	
9am to 12pm	Mr Harding.	
1 pm to 3 pm	Mr and Dr Pacitti	

Driver: Toni		Day: Saturday
Time	Client	
9:30am to 11am	Barker family	
12pm to 1:30pm	Mr and Mrs Khan.	
2.30 pm to 5pm	Lee family	

(Total for Question 7 is 3 marks)

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- 8 At the beginning of the week FayeZ writes down the mileage of his limousine.

Mileage
2529

At the end of the week the mileage is 2834
FayeZ knows he used 75.2 litres of petrol during this week.

The handbook states that the limousine uses 1 gallon of petrol for every 20 miles.

FayeZ wants to know if his limousine used 1 gallon of petrol for every 20 miles that week.

1 gallon = 4.54 litres

Did his limousine use 1 gallon of petrol for every 20 miles that week?

(4)

Use the box below to show clearly how you get your answer.

$$2834 - 2529 = 305 \text{ miles.}$$

$$\frac{75.2}{4.54} = 16.56 \text{ Gallons used.}$$

$$\frac{305 \text{ mi}}{16.56 \text{ gal}} = 18.41 \text{ mpg.}$$

No, he did not.

(Total for Question 8 is 4 marks)

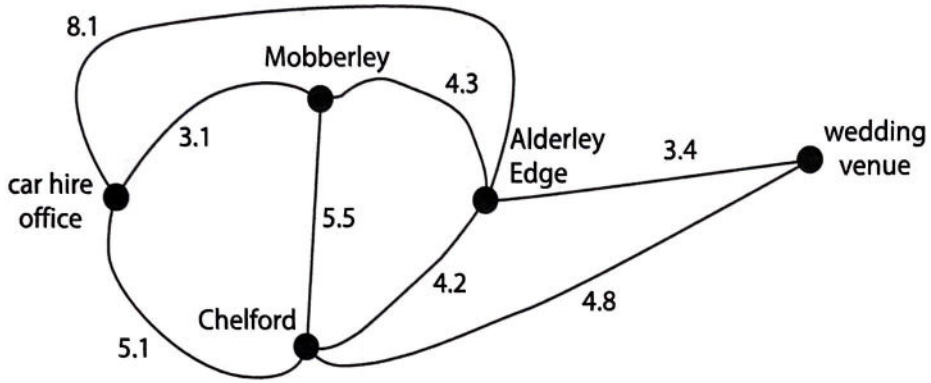
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9 On Friday Toni will take some clients to a wedding venue.

He will

- start at the car hire office
- pick up clients in Alderley Edge, Chelford and Mobberley
- then take all of these clients to the wedding venue.

The plan shows distances in miles.



Toni wants to use the shortest route.

(a) Find the shortest route for Toni.
Work out the distance of this route. (3)

Use the box below to show clearly how you get your answer.

$O \rightarrow M \rightarrow AE \rightarrow C \rightarrow WV :$
 $8.1 + 4.3 + 4.2 + 4.8 = 16.4 \text{ mi.}$
 $O \rightarrow M \rightarrow C \rightarrow AE \rightarrow WV :$
 $8.1 + 5.5 + 4.2 + 3.4 = \underline{16.2 \text{ mi.}}$
 Shortest route is
 Office \rightarrow Mobberley \rightarrow Chelford \rightarrow Alderley Edge \rightarrow Venue .

(b) What else should Toni take into account when he plans his route? (1)

Write your answer in the box below.

Potential traffic .

(Total for Question 9 is 4 marks)

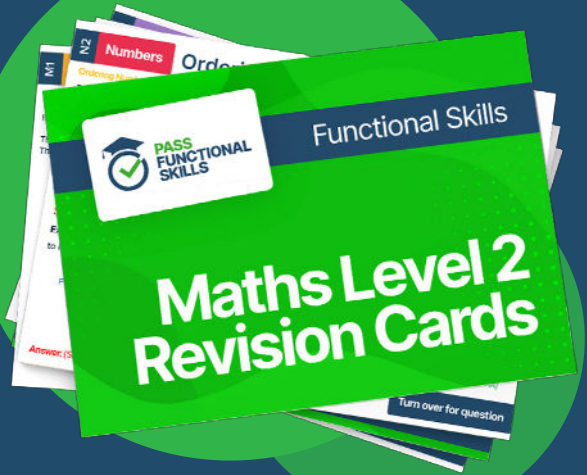
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