

Please check the examination details below before entering your candidate information

Candidate surname

Other names

**Pearson Edexcel
Functional Skills**

Centre Number

Candidate Number

*****Past Paper 2*****

Time: 1 hour 30 minutes

Paper Reference **PMAT2/C02**

Mathematics

Level 2

Section B (Calculator)



You must have:

Pen, calculator, HB pencil, eraser, ruler graduated in cm and mm, protractor, pair of compasses. Tracing paper may be used.

Total Marks

My signature confirms that I will not discuss the content of the test with anyone.

Signature: _____

Instructions

- Use **black** ink or 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.
- Write your final answers in the boxes provided.
- Answer the questions in the spaces provided – *there may be more space than you need.*
- You **must** show clearly how you get your answers in the spaces provided. Marks will be awarded for your working out.
- Check your working and your answers at each stage.
- Diagrams are **not** accurately drawn, unless otherwise indicated.
- **Calculators may be used.**
- If your calculator does not have a π button take the value of π to be 3.14

Information

- The total mark for this section is 48.
- The total mark for this paper is 64.
- The marks for each question are shown in brackets
– *use this as a guide as to how much time to spend on each question.*
- This sign shows where marks will be awarded for showing your checks.

Advice

- Read each question carefully before you start to answer it.
- Check your answers if you have time at the end.

Turn over ►

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.CG Maths.
Worked Solutions


Pearson

Please note that these worked solutions have neither been provided nor approved by Pearson Education and may not necessarily constitute the only possible solutions. Please refer to the original mark schemes for full guidance.

Any writing in blue indicates what must be written in order to answer the questions and get the marks. The worked solutions have been designed to show the smallest amount of work which needs to be done to answer the question.

Anything written in green in a cloud doesn't have to be written in the exam.

Anything written in orange in a rectangle doesn't have to be written in the exam and is there to show what should be put into a calculator or measured using a ruler or protractor.

If you find any mistakes or have any requests or suggestions, please send an email to curtis@cgmaths.co.uk

SECTION B

Answer ALL questions. Write your answers in the spaces provided.

- 1 Karen needs to buy a new fridge.
The fridge must fit in a space in the kitchen.

The space has width 19 inches, depth 22 inches and height 36 inches.

Karen sees these fridges for sale.

fridge	width in cm	depth in cm	height in cm
A	47.2	44.6	84.2
B	49.4	44.6	83.9
C	46.5	44.6	94.2

1 inch = 2.54 cm

Karen will buy one of these fridges.

Choose a suitable fridge for Karen to buy.
You **must** show your working.

$$19 \times 2.54 = 48.26$$

The space has width 48.26cm meaning that it cannot be fridge B as it is too wide

$$36 \times 2.54 = 91.44$$

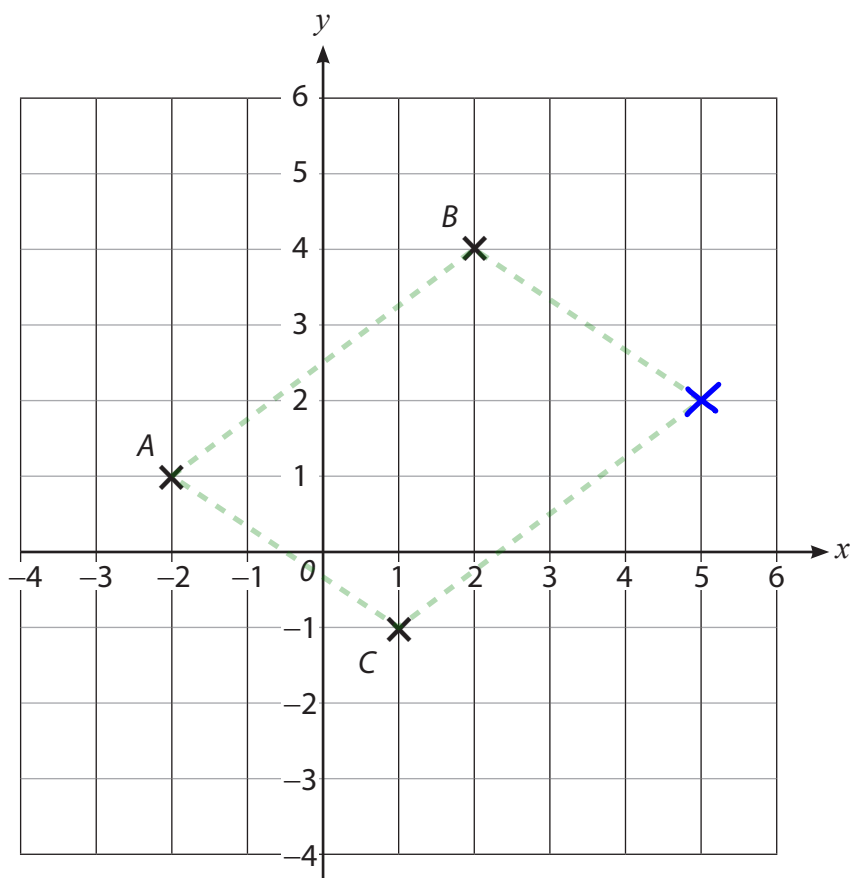
The space has height 91.44cm meaning that it cannot be fridge C as it is too high

If it cannot be B or C it must be A

A

(Total for Question 1 is 3 marks)

2



(a) Write down the coordinates of point C.

(1)

(1, -1)

(b) Mark with a cross the point D on the grid so that ABCD is a parallelogram.

(1)

(c) Write down the sum of the angles in a parallelogram.

(1)

Any four sided shape has 360° as the sum of its internal angles

360

°

(Total for Question 2 is 3 marks)

- 3 Carla is the director of a building company. She employs builders at a site in Hull and at a site in London.

The average day rate of her builders in London is £153

In Hull the day rates she pays her builders are shown in this table

builder	A	B	C	D	E	F	G
day rate (£)	290	75	115	84	120	89	298

The builders in Hull say their average day rate is less than £153

Carla says the average day rate is the same in Hull and in London.

Show how both these statements can be true.

You **must** show your working.

(4)

~~75, 84, 89, 115, 120, 290, 298~~

Listing the numbers in order then crossing out from both ends until there is one number left in the middle shows that the median, which is a type of average, is 115. This is less than £153 so the builders in Hull could be true

$$\frac{290 + 75 + 115 + 84 + 120 + 89 + 298}{7} = 153$$

Adding all of the numbers together then dividing by how many there are shows that the mean, which is a type of average, is £153. This is the same as the average in London so Carla's statement could be true

(Total for Question 3 is 4 marks)

4 Last year 123 students left a college with a pass in English.

This year 27 more students than last year left the college with a pass in English.

The college says

'The number of students leaving college with a pass in English has increased by 24% from last year.'

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

(2)

$$123 \times \frac{24}{100}$$

30

Converting the percentage into a fraction by putting it over 100. Multiplying the 123 by this works out 24% of the number of students leaving college with a pass in English last year. 29.52 is rounded to 30

The number who passed does not increase by 27 if the number who passed last year is increased by 24%

No



- (b) Use a reverse calculation to show a check of your answer.

(1)

$$29.52 \div \frac{24}{100} = 123$$

(Total for Question 4 is 3 marks)

- 5 Tim did a survey at a large shopping centre.
He asked 400 visitors to the centre to choose the main reason for their visit.
The reasons were shops, free parking, food court and location.

(a) Complete the two-way table.

(3)

	shops	free parking	food court	location	total
male	88	24	40	21	173
female	110	38	56	23	227
total	198	62	96	44	400

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From the people taking part in the survey, one person is chosen at random to get a prize.

(b) Find the probability a female who chose location gets the prize.

(2)

23 out the of the 400 who took the survey were females who chose location

$$\frac{23}{400}$$

(Total for Question 5 is 5 marks)

6 Wahab sells cars.

The table shows information about the number of cars he sold each week for the last 26 weeks.

number of cars sold each week	frequency		
1–5	2		
6–10	12		
11–15	9		
16–20	3		

Wahab estimates he sold a mean average of 10 cars per week.

Is this estimate of the mean correct?

Show why you think this.

$$\frac{\frac{1+5}{2} \times 2 + \frac{6+10}{2} \times 12 + \frac{11+15}{2} \times 9 + \frac{16+20}{2} \times 3}{26} = 10.5 \quad (3)$$

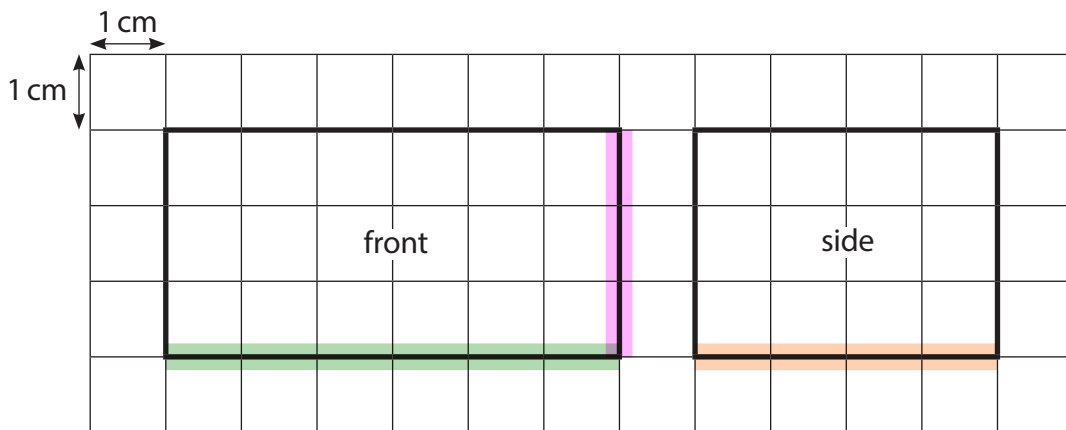
Adding the highest and lowest number of cars in each category then dividing by 2 works out the mean of each category, which is the midpoint. Multiplying the midpoints by the frequency works out an estimate of the total number of cars per category. Adding together all of these works out an estimate of the total number of cars sold. Dividing this by the 26 weeks works out an estimate of the mean cars per week

The estimated mean is 10.5, not 10

No

(Total for Question 6 is 3 marks)

7 The front elevation and the side elevation of a cuboid are drawn on the grid below.



(a) Find the volume of the cuboid.

$6 \times 4 \times 3$

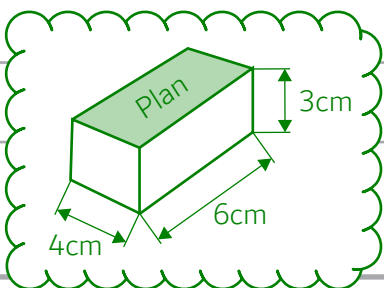
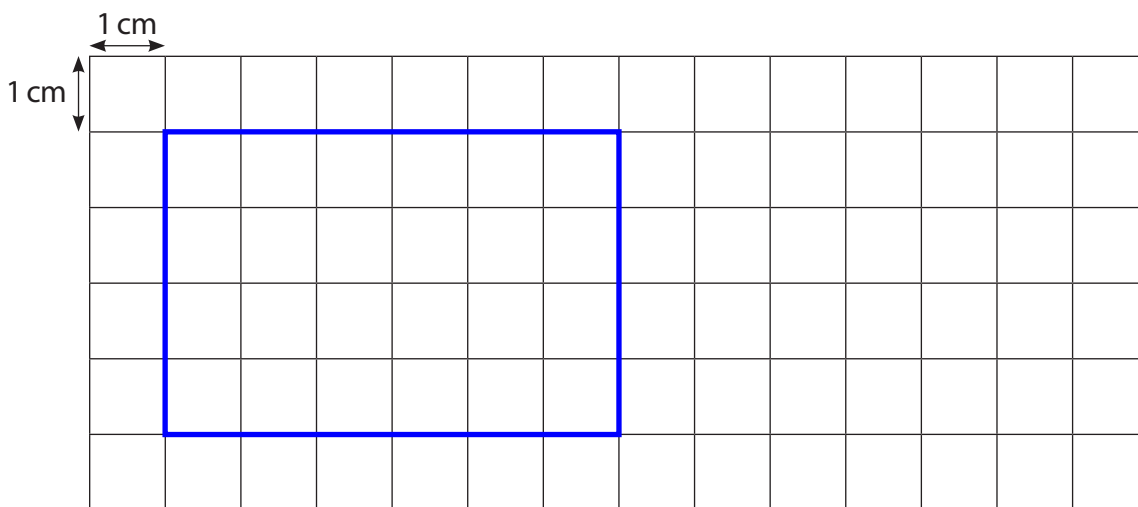
(2)

Volume of cuboid = length x width x height. The side highlighted in green must be the length. The side highlighted in orange must be the width. The side highlighted in pink must be the height

72 cm³

(b) Draw the plan of the cuboid on the grid below.

(2)



(Total for Question 7 is 4 marks)

- 8 Mina runs a football club.
She needs to order size 3, size 4 and size 5 footballs in the ratio 6:2:1
Mina needs to order a total of 180 footballs.

(a) Complete the order form for Mina.

(3)

$$\frac{180}{6+2+1}$$

We are given the total number of footballs so we need to work out how many parts in the ratio represent this. $6 + 2 + 1$ works out how many parts there are in total in the ratio. Dividing the 180 by this works out what 1 part represents. This gives 20

$$20 \times 6$$

1 part is 20 so multiplying this by 6 works out what the 6 parts which represent the size 3 footballs represents

$$20 \times 2$$

1 part is 20 so multiplying this by 2 works out what the 2 parts which represent the size 4 footballs represents

$$20 \times 1$$

1 part is 20 so multiplying this by 1 works out what the 1 part which represent the size 5 footballs represents

order form	
size of football	number
3	120
4	40
5	20

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Mina also needs to buy medical equipment.

She needs 23 packets of plasters.

One packet costs £4.49

A box of 5 packets costs £20.25

(b) Can Mina buy 23 packets of plasters for less than £100?

Show why you think this.

$$\frac{20.25}{5} = 4.05$$

This shows that it is cheaper per packet to buy them in boxes of 5. Dividing the £20.25 by 5 works out the cost of each packet and this is less than £4.49

(3)

$$4 \times 20.25 + 3 \times 4.49 = 94.47$$

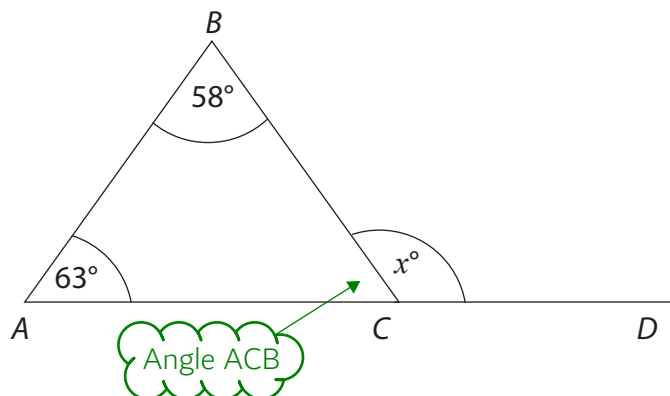
There should be as many boxes of 5 packets as possible. 4 lots of 5 go into 23 with a remainder of 3. So 4 boxes of 5 packets and 3 single packets can be bought to get exactly 23 packets. 4×20.25 works out the cost of the 4 boxes of 5 packets and 3×4.49 works out the cost of the 3 single packets. Adding together both of these costs works out the total cost of buying 23 packets

£94.47 is less than £100

Yes

(Total for Question 8 is 6 marks)

- 9 ABC is a triangle.
 ACD is a straight line.



- (a) Work out the value of x .

(2)

$$180 - 63 - 58$$

There are 180° in total in a triangle. Subtracting the other angles from this leaves angle ACB

$$180 - 59$$

There are 180° around a point on a straight line. Subtracting angle ACB from this leaves x

121 °



- (b) Use estimation to check your answer.

(1)

$$180 - 60 - 60$$

$$180 - 60 = 120$$

Doing the same calculations as above but rounding each of the angles to 1 significant figure. 120 is close to 121

(Total for Question 9 is 3 marks)

- 10 There are roadworks on a motorway.
The average speed limit is 50 mph.

A car travels a distance of 18 miles in 24 minutes.

Is the average speed of the car less than 50 mph?
Show why you think this.

$$18 \div \frac{24}{60} = 45$$

The units of miles per hour means that the miles needs to be divided by the time in hours. There are 60 minutes in an hour so dividing the 24 by 60 converts it into hours. Dividing the 18 miles by this works out that the speed is 45mph

(3)

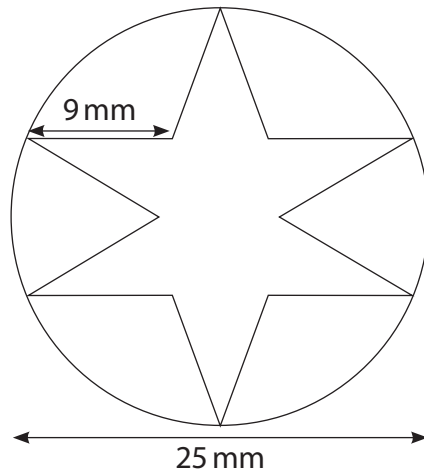
45 mph is less than 50mph

Yes

(Total for Question 10 is 3 marks)

11 Mario uses wire to make earrings.

Mario uses wire to make a circle with diameter 25 mm.
He then adds a star shape made from wire.
All the sides of the star shape have length 9 mm.



Mario has 3 rolls of wire.
There are 500 mm of wire on each roll.

Mario is going to make 8 of these earrings.

Will Mario have enough wire to make 8 of these earrings?

(5)

$$3 \times 500 = 1500$$

This shows that there is 1500mm of wire on 3 rolls

$$8(\pi \times 25 + 12 \times 9) = 1492$$

Circumference is the distance around the outside of the circle. Circumference = $\pi \times$ diameter.
The diameter is 25mm. So $\pi \times 25$ works out the circumference. There are 12 sides on the star and each one is 9mm so 12×9 works out the total length of these. Adding the circumference and the total length of the sides on the star works out what length of wire is needed for one of the earrings. Multiplying this by 8, as there are to be 8 earrings, works out the total length needed for 8 earrings, which is about 1492mm

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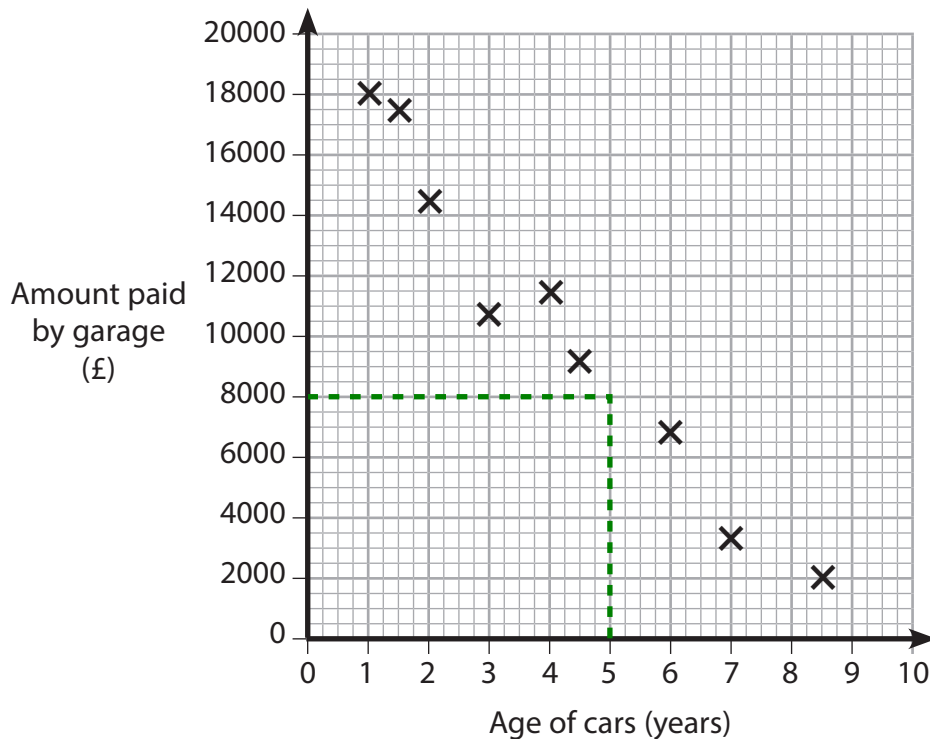
The 1500mm Mario has is more than the 1492mm needed so Mario does have enough wire

Yes

(Total for Question 11 is 5 marks)

12 Daniel has a blog about how garages buy and sell cars.

The scatter diagram gives information about the amount garages pay for one type of car depending on its age.



Daniel is going to use the scatter diagram to estimate the monthly payments for a car the garage is going to sell.

Daniel knows garages sell cars for 34% more than they paid.

The car is 5 years old and there are 24 equal monthly payments.

Work out the cost of one monthly payment.

$$\frac{8000 \times \frac{100+34}{100}}{24}$$

(6)

The amount paid by the garage for the car when it is 5 years old is about £8000. $100 + 34$ works out the percentage this will increase to when increased by 34%. Dividing this by 100 converts the percentage into a fraction, which when the £8000 is multiplied by it increases it by 34%. Dividing this by the 24 equal monthly payments works out the cost of one monthly payment

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£446.6666... is rounded to the nearest penny

£ 446.67

(Total for Question 12 is 6 marks)

TOTAL FOR SECTION B IS 48 MARKS
TOTAL FOR PAPER IS 64 MARKS