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Candidate surname					Other names				
Centre Number					Candidate Number				

Pearson Edexcel Level 1/Level 2 GCSE (9–1)

Wednesday 11 June 2025

Morning (Time: 1 hour 30 minutes)	Paper reference	1MA1/3F
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Mathematics
PAPER 3 (Calculator)
Foundation Tier



You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB or B pencil, eraser, calculator, Formulae Sheet (enclosed). Tracing paper may be used.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- If pencil is used for diagrams/sketches/graphs it must be dark (HB or B).
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
– *there may be more space than you need.*
- You must **show all your working**.
- 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 3.142 unless the question instructs otherwise.

Information

- The total mark for this paper is 80
- The marks for **each** question are shown in brackets
– *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Try to answer every question.
- 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 should be written in the exam.

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

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

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

- 1 Write down the value of the 7 in the number 49.715

$$40 + 9 + 0.7 + 0.01 + 0.005$$

0.7

(Total for Question 1 is 1 mark)

- 2 Find $\sqrt{5.76}$

Put it into the calculator

2.4

(Total for Question 2 is 1 mark)

- 3 Write 19% as a fraction.

Percentage is out of 100

$\frac{19}{100}$

(Total for Question 3 is 1 mark)

- 4 Here are some fractions.

$$\frac{3}{9} \quad \frac{6}{18} \quad \frac{2}{6} \quad \frac{4}{10} \quad \frac{5}{15}$$

Which one of these fractions is **not** equivalent to $\frac{1}{3}$?

Putting each fraction into the calculator simplifies them to $\frac{1}{3}$, apart from $\frac{4}{10}$ which simplifies to $\frac{2}{5}$

$\frac{4}{10}$

(Total for Question 4 is 1 mark)

- 5 Write down two factors of 32

32 is divisible by both 1 and 32, so these are factors of 32

1 , 32

(Total for Question 5 is 1 mark)

- 6 Abi has some £10 notes and some £20 notes.
The notes have a total value of £400

Abi has six £20 notes.

Work out the number of £10 notes Abi has.

20×6 ← Multiplying £20 by the 6 notes finds that the £20 notes are worth £120

$400 - 120$ ← Subtracting the value of the £20 notes from the total £400 finds that the £10 notes are worth £280

$280 \div 10$ ← Dividing the value of the £10 notes by £10 finds that there are 28 £10 notes

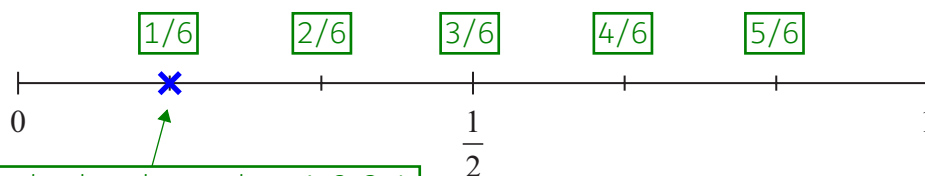
28

(Total for Question 6 is 3 marks)

7 Tom has a fair ordinary dice.

He rolls the dice once.

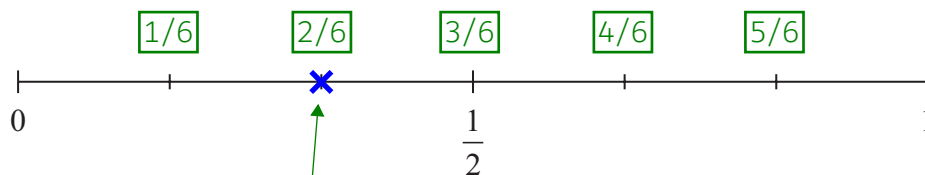
- (a) On the probability scale below, mark with a cross (×) the probability that Tom gets the number 2



An ordinary fair dice has the numbers 1, 2, 3, 4, 5, 6. 1 out of the 6 numbers is the number 2

(1)

- (b) On the probability scale below, mark with a cross (×) the probability that Tom gets a number greater than 4



5 and 6 are greater than 4. This is 2 out of the 6 numbers

(1)

(Total for Question 7 is 2 marks)

8 Here is a menu.

Drink	Cake
Coffee (C)	Brownie (B)
Tea (T)	Flapjack (F)
Lemonade (L)	Scone (S)

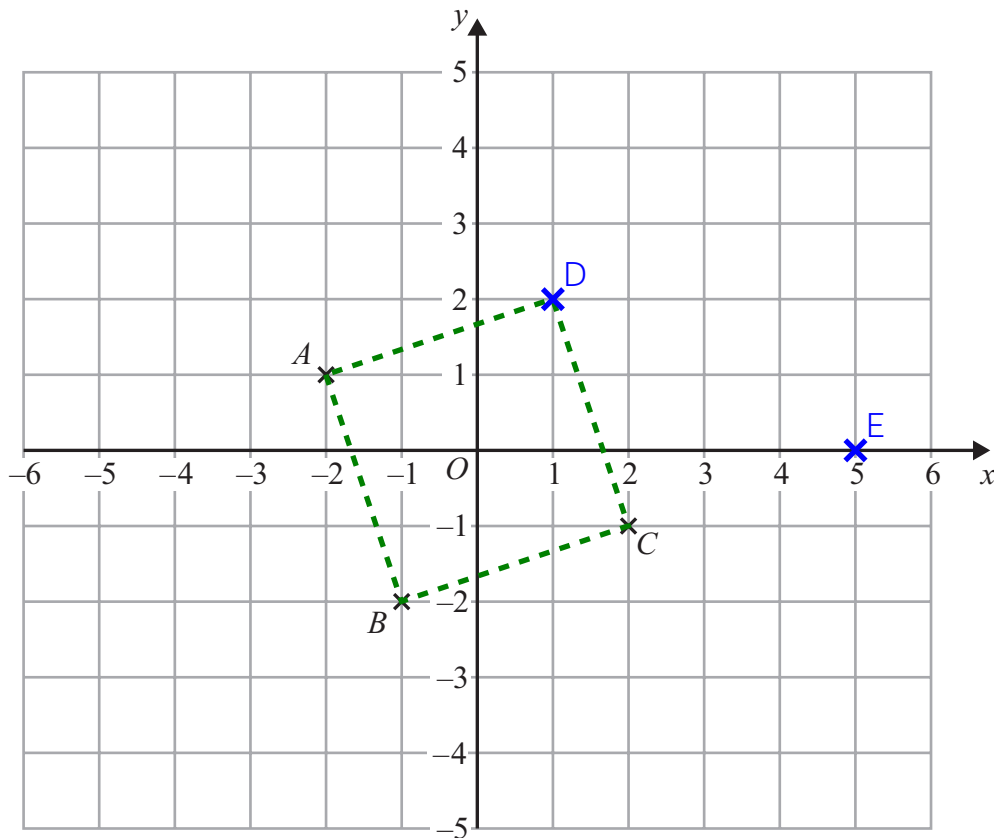
Asma can choose one drink and one cake.

Write down all the possible combinations Asma can choose.

CB, CF, CS, TB, TF, TS, LB, LF, LS

Using systematic listing

(Total for Question 8 is 2 marks)



- (a) Write down the coordinates of point A .

x-coordinate y-coordinate
↓ ↓
 (..... -2, ... 1)
 (1)

- (b) On the grid, mark with a cross ($\times$) the point D so that $ABCD$ is a square.
Label this point D .

Four equal sides and four right-angles
 (1)

- (c) On the grid, mark with a cross ($\times$) the point E so that C is the midpoint of BE .
Label this point E .

C is halfway on a straight line, so BC should repeat with the same length and direction for CE
 (1)

(Total for Question 9 is 3 marks)

10 Jason says,

“The cube root of 27 is 9 because 27 divided by 3 is 9”

Is Jason correct?

You must give a reason for your answer.

No, the cube root of 27 is 3

$$\sqrt[3]{27} = 3$$

(Total for Question 10 is 1 mark)

11 Elena's height is 136 centimetres.

George's height is 1.2 metres.

Elena's height is greater than George's height.

How many centimetres greater?

$$1.2 \times 100$$

1 metre = 100 centimetres. So multiplying the 1.2 metres by 100 converts it to 120 centimetres

$$136 - 120$$

Subtracting George's height in centimetres from Elena's height in centimetres finds that the difference is 16 centimetres

16

centimetres

(Total for Question 11 is 2 marks)

12 The n th term of a sequence is $4n - 1$

(a) Work out the 3rd term of the sequence.

$4(3) - 1$ ← $n = 3$ on the 3rd term. Substituting 3 for n finds the 3rd term

11

(1)

Here are the first four terms of a different sequence.

9 $\boxed{+6}$ 15 $\boxed{+6}$ 21 $\boxed{+6}$ 27

(b) Is 63 a number in this sequence?

You must give a reason for your answer.

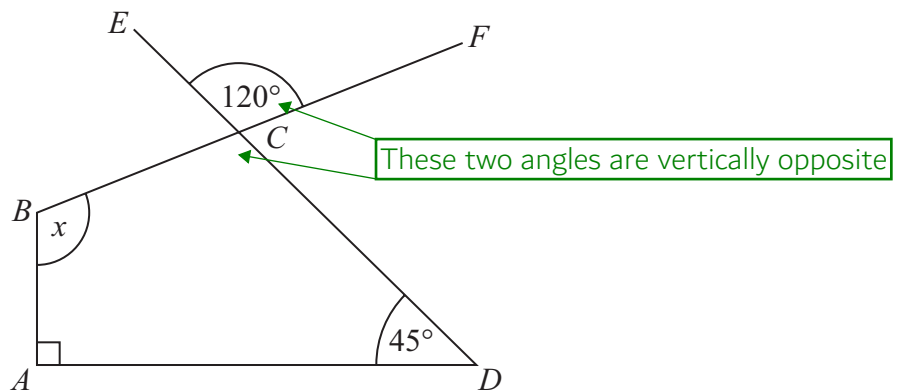
33, 39, 45, 51, 57, 63 ← Keep adding 6 until either 63 is reached or it goes beyond 63

Yes ← 63 is in the sequence

(2)

(Total for Question 12 is 3 marks)

- 13 $ABCD$ is a quadrilateral.
 BCF and DCE are straight lines.



Work out the size of the angle marked x .
 Give a reason for each stage of your working.

Angle $BCD = 120^\circ$ as vertically opposite angles are equal

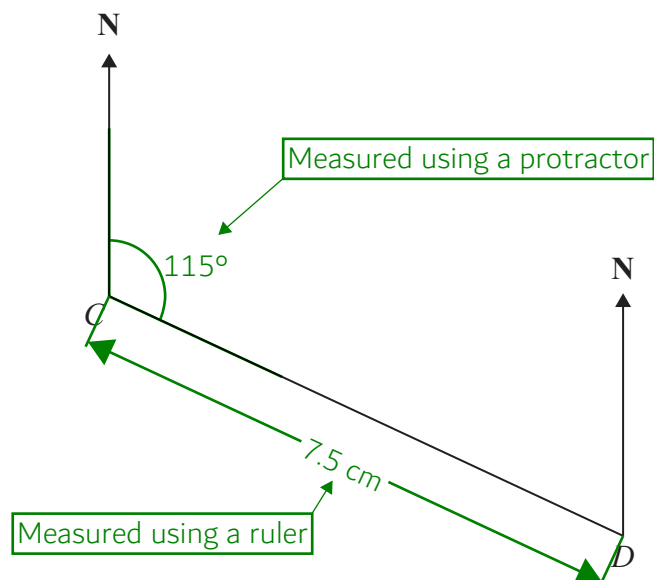
$360 - 120 - 45 - 90 \leftarrow$ Subtracting angle BCD , angle CDA and angle BAD from 360° leaves angle x

$x = 105$ as angles in a quadrilateral add up to 360°

105

(Total for Question 13 is 4 marks)

14 The accurately drawn diagram shows two points, C and D , on a map.



(a) Find the bearing of D from C .

The bearing is the number of degrees turned clockwise from North at C to face D

115°
(1)

The scale of the map is 1 cm represents 4 km.

(b) Work out the real distance from C to D .

7.5×4 ← The number of km is 4 times the number of cm

30 km
(2)

(Total for Question 14 is 3 marks)

15 There are 200 counters in a bag.

87 of the counters are green.

24 of the counters are yellow.

(a) What fraction of the counters are green?

$$\boxed{87 \text{ out of the } 200 \text{ counters are green}} \longrightarrow \frac{87}{200}$$

(1)

(b) What percentage of the counters are yellow?

$$\frac{24}{200} \times 100 \longleftarrow \boxed{\text{Expressing the fraction which are yellow. Multiplying any fraction by 100 converts it to a percentage}}$$

$\frac{12}{100} = 12\%$
(1)

(Total for Question 15 is 2 marks)

16 A team plays 48 games.

The team wins $\frac{3}{8}$ of the 48 games.

The number of games the team loses is the same as the number of games the team draws.

Work out the number of games the team loses.

$$\frac{3}{8} \times 48 \longleftarrow \boxed{\text{This works out that } 3/8 \text{ of the } 48 \text{ games is } 18 \text{ games which were won}}$$

$$48 - 18 \longleftarrow \boxed{\text{Subtracting the } 18 \text{ games which were won from the total } 48 \text{ games finds that } 30 \text{ games were lost and drawn}}$$

$$30 \div 2 \longleftarrow \boxed{\text{The number of losses is the same as the number of draws so dividing the } 30 \text{ games lost and drawn by } 2 \text{ finds that } 15 \text{ games were lost and } 15 \text{ games were drawn}}$$

15

(Total for Question 16 is 3 marks)

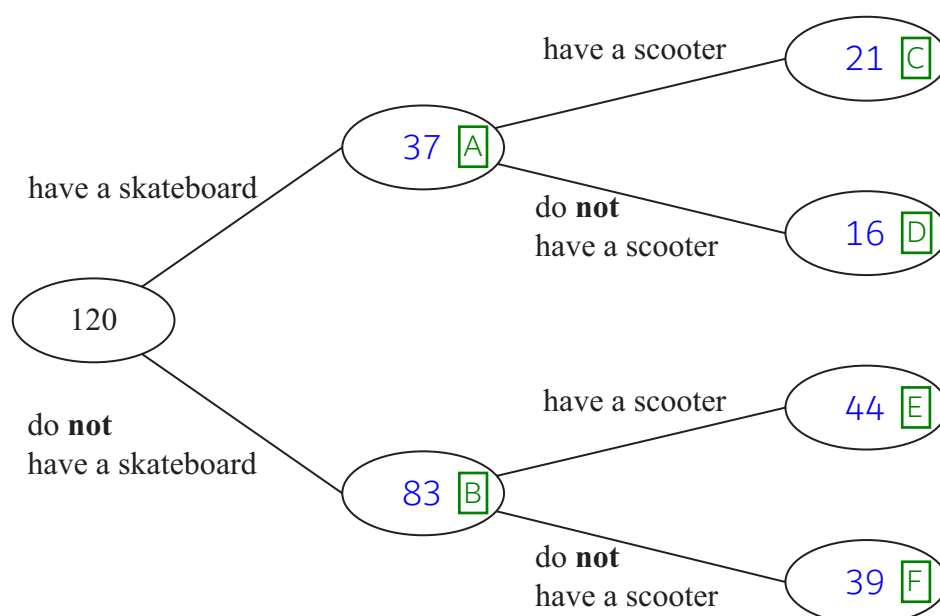
17 120 students are asked if they have a skateboard or a scooter.

37 of the students have a skateboard.

21 of the students who have a skateboard also have a scooter.

65 of the students have a scooter.

(a) Use this information to complete the frequency tree.



(3)

One of the 120 students is chosen at random.

(b) Find the probability that this student does **not** have a skateboard.

83 out of the 120 students do not have a skateboard

$$\frac{83}{120}$$

(1)

(Total for Question 17 is 4 marks)

A: 37 of the students have a skateboard.
 B: $120 - 37 = 83$ do not have a skateboard.
 C: 21 of the students who have a skateboard also have a scooter.
 D: $37 - 21 = 16$ of the students who have a skateboard do not have a scooter.
 E: 65 have a scooter. $65 - 21 = 44$ do not have a skateboard but have a scooter.
 F: $83 - 44 = 39$ do not have a skateboard and do not have a scooter

- 18 Amy buys a car.
The car costs £12 000

Amy pays a deposit of 20% of the cost.
She pays the rest of the cost in 24 equal monthly payments.

Amy says that each monthly payment is less than £450

Is Amy correct?
You must show how you get your answer.

$$\frac{20}{100} \times 12000$$

Putting the 20% over 100 converts it to a fraction. Multiplying this by the £12000 finds that the 20% deposit is £2400

$$12000 - 2400$$

Subtracting the £2400 deposit from the £12000 finds that the rest of the cost is £9600

$$9600 \div 24 = 400$$

Dividing the rest of the cost by the 24 equal monthly payments finds that each monthly payment is £400

Yes

£400 for each monthly payment is less than £450

(Total for Question 18 is 3 marks)

19 Katya counted the number of people in each of 50 cars.

The table gives information about her results.

Number of people	Frequency
1	16
2	15
3	7
4	9
5	3

16
30
21
36
15
118

A

B

(a) Find the median number of people.

$$\frac{50 + 1}{2}$$

Using the formula $(n + 1)/2$, where n is the total number of cars, finds that the 25.5th car when put in order is the median, which is halfway between the 25th and 26th

$$25 - 16 = 9$$

Counting the first 16 cars finds that there are another 9 cars to count to get to the 25th

The next category has 15 cars. This is more than the 9 cars to be counted to get to the 25th. So the median must be in this category

2

(1)

(b) Work out the mean number of people.

A: multiplying the number of people by the frequency for each category finds the total number of people in each category.

B: adding all the totals gives an overall total number of people in all the cars

$$118 \div 50$$

Mean = total $\div$ number, where total is the overall total number of people and number is the number of cars

2.36

(3)

(Total for Question 19 is 4 marks)

20 (a) Use your calculator to work out the value of

$$\frac{42.1 - 29.53}{9.82 + 37.6}$$

Give your answer as a decimal.

Write down all the figures on your calculator display.

Typing it in the calculator exactly as it is above

0.2650780261

(2)

(b) Write your answer to part (a) correct to 2 significant figures.

The 1st 0 is not a significant figure. The 2nd significant figure is highlighted in green. The 5 after it causes the 2nd significant figure to round up to a 7. Then everything after it is set to 0 and is ignored

0.27

(1)

(Total for Question 20 is 3 marks)

21 (a) Simplify $y^{10} \div y^2$

$a^x \div a^y = a^{x-y}$. So the indices are subtracted. $10 - 2 = 8$

$$y^8$$

(1)

(b) Simplify $(e^3)^2$

$(a^x)^y = a^{xy}$. So the indices are multiplied. $3 \times 2 = 6$

$$e^6$$

(1)

(c) Expand $x(3x^2 + 5)$

$x \times 3x^2 = 3x^3$ and $x \times 5 = 5x$

$$3x^3 + 5x$$

(1)

(d) Expand and simplify $(n + 5)(n - 2)$

$n^2 - 2n + 5n - 10$ ← $n \times n = n^2$ and $n \times -2 = -2n$ and $5 \times n = 5n$ and $5 \times -2 = -10$

Simplifying by collecting like terms. $-2n + 5n = 3n$

$$n^2 + 3n - 10$$

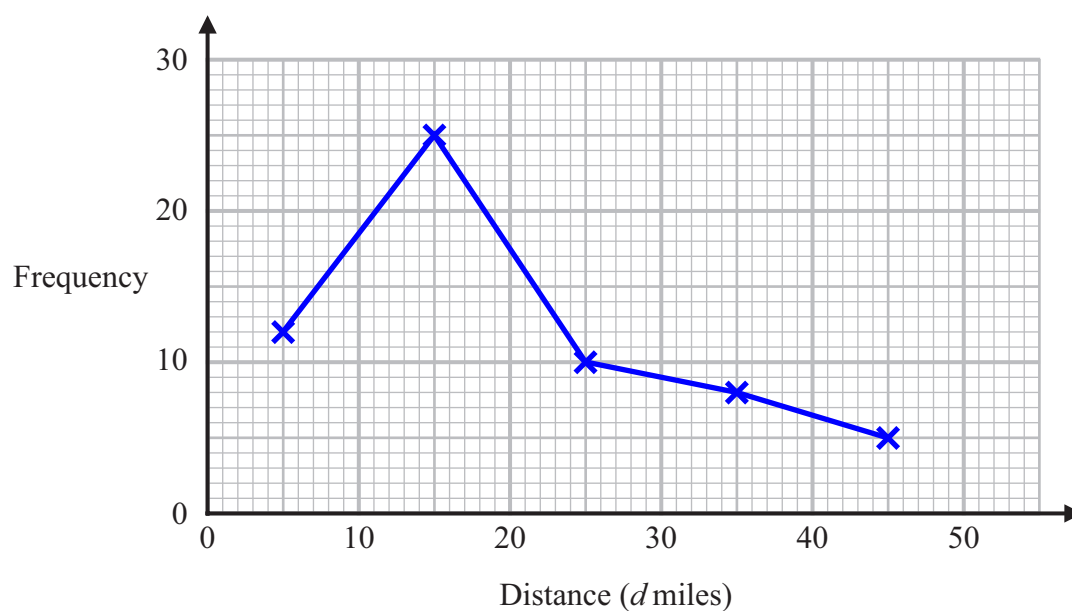
(2)

(Total for Question 21 is 5 marks)

22 The table shows information about the distances that 60 people travel to work.

Distance (d miles)	Frequency
$0 < d \leq 10$	12
$10 < d \leq 20$	25
$20 < d \leq 30$	10
$30 < d \leq 40$	8
$40 < d \leq 50$	5

Draw a frequency polygon for the information in the table.



(Total for Question 22 is 2 marks)

Plotting the frequencies at the midpoint of each interval then joining them up with a series of straight lines

23 Ben is trying to make m the subject of $p = \frac{m}{3} + 5$

Here is his working.

$$p - 5 = \frac{m}{3}$$

$$3 \times p - 5 = m \quad \leftarrow \text{This line should be } 3 \times p - 15 = m, \text{ as the } -5 \text{ should also be multiplied by } 3$$

$$m = 3p - 5$$

Ben's answer is wrong.

(a) What mistake has Ben made?

Did not multiply the -5 by 3

(1)

(b) Factorise fully $2x^3y + 4xy^2$

The highest common factor of $2x^3y$ and $4xy^2$ is $2xy$, as 2 is the HCF of 2 and 4, x is the highest power of x which is in common to both, and y is the highest power of y in common to both. Bringing the HCF out as a factor, dividing both terms by it and leaving the result in a bracket

$$2xy(x^2 + 2y)$$

(2)

(Total for Question 23 is 3 marks)

24 Mia pays £25 for 200 oranges.

Mia puts the oranges into bags.
She puts 5 oranges into each bag.

Mia sells all the bags of oranges for £1 each bag.

Work out Mia's percentage profit.

$200 \div 5$ ← Dividing the 200 oranges by the 5 oranges in each bag finds that there are 40 bags

40×1 ← Multiplying the 40 bags by the £1 Mia sells each bag for finds that Mia's income is £40

$\frac{40 - 25}{25} \times 100$ ← Subtracting the £25 paid from the £40 income expresses the profit.
Putting this over the original £25 paid expresses the profit as a fraction. Multiplying this by 100 converts the fraction to a percentage

.....60.....%

(Total for Question 24 is 3 marks)

- 25 In London, 2 kg of carrots cost £3.75
In New York, 5 lbs of carrots cost 4.90 US dollars.

£1 = 1.20 US dollars

1 kg = 2.2 lbs

In which city are carrots better value for money, London or New York?

You must show how you get your answer.

$375 \div 2 = 187.5$ ← £3.75 = 375p. Dividing this by the 2 kg find that 1 kg costs 187.5p in London

$5 \div 2.2$ ← Dividing the 5 lbs by the 2.2 converts it to 2.27 kg

$4.90 \div 2.27$ ← 2.27 kg = 4.90 US dollars. Dividing both sides by 2.27 gets finds that 1 kg costs 2.156 US dollars

$2.156 \div 1.20$ ← Dividing the 2.156 US dollars by the 1.20 convert it to £1.796

$1.796 \times 100 = 179.6$ ← £1 = 100p. Multiplying the £1.796 by 100 converts it to 179.6p

New York ← 179.6p for 1 kg is less than 187.5p for 1 kg

(Total for Question 25 is 4 marks)

- 26 Karim rounds a number, n , to 1 decimal place.
The result is 23.8

Complete the error interval for n .

$$23.8 \pm \frac{0.1}{2}$$

Adding and subtracting half of what it has been rounded to the nearest gives the upper and lower bound. It has been rounded to the nearest 0.1 as this is the place value of the 1st decimal place

$$\dots\dots\dots 23.75 \leq n < 23.85 \dots\dots\dots$$

(Total for Question 26 is 2 marks)

- 27 A plane takes 2 hours 24 minutes to fly from Luton to Alicante.
The plane flies a distance of 1512 kilometres.

Work out the average speed of the plane.
Give your answer in kilometres per hour.

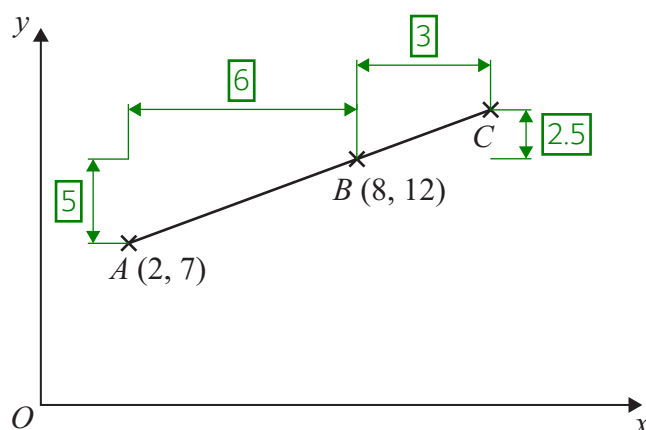
$$1512 \div 2^{\circ}24^{\circ}$$

Kilometres per hour means distance in kilometres divided by time in hours. Entering the 2 hours 24 minutes as a sexagesimal

$$\dots\dots\dots 630 \dots\dots\dots \text{ kilometres per hour}$$

(Total for Question 27 is 3 marks)

28 ABC is a straight line.



Point A has coordinates $(2, 7)$

Point B has coordinates $(8, 12)$

$$BC = \frac{1}{2} AB$$

Find the coordinates of point C .

$$8 - 2$$

Subtracting the x-coordinate of A from the x-coordinate of B finds that AB is 6 in the x-direction

$$6 \div 2$$

BC is half of AB so BC is 3 in the x-direction

$$8 + 3$$

Adding the 3 in the x-direction from B to C to the x-coordinate of B finds that the x-coordinate of C is 11

$$12 - 7$$

Subtracting the y-coordinate of A from the y-coordinate of B finds that AB is 5 in the y-direction

$$5 \div 2$$

BC is half of AB so BC is 2.5 in the y-direction

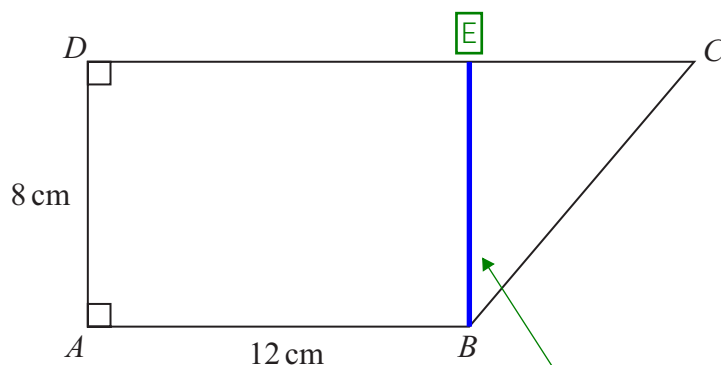
$$12 + 2.5$$

Adding the 2.5 in the y-direction from B to C to the y-coordinate of B finds that the y-coordinate of C is 14.5

(..... 11 , ... 14.5)

(Total for Question 28 is 3 marks)

29 The diagram shows trapezium $ABCD$.



Drawing a line here splits the shape into a rectangle and a right-angled triangle

$$AB = 12 \text{ cm}$$

$$AD = 8 \text{ cm}$$

The trapezium has an area of 112 cm^2

Work out the perimeter of the trapezium.

Give your answer correct to 3 significant figures.

$$12 \times 8 \leftarrow \text{Area of rectangle} = \text{base} \times \text{height} = 96 \text{ cm}^2$$

$$112 - 96 \leftarrow \text{Subtracting the area of the rectangle from the area of the trapezium finds that the area of the triangle is } 16 \text{ cm}^2$$

$$\frac{1}{2} \times B \times 8 = 16 \leftarrow \text{Area of triangle} = \frac{1}{2} \times \text{base} \times \text{height. Let B be the base EC. EB is the height}$$

$$B = 4 \leftarrow \text{Dividing both sides by } \frac{1}{2} \times 8 \text{ gets B on its own. So EC is 4 cm}$$

$$8^2 + 4^2 = BC^2 \leftarrow \text{Using Pythagoras' Theorem in the right-angled triangle to find BC. } a^2 + b^2 = c^2, \text{ where a and b are the shorter sides and c is the longest side}$$

$$BC = \sqrt{80} \leftarrow \text{Square rooting both sides finds BC}$$

$$12 + 8 + 12 + 4 + \sqrt{80} \leftarrow \text{Adding all the outside lengths finds the perimeter. } AB + AD + DE + EC + BC$$

44.94... is rounded correct to 3 significant figures

44.9

cm

(Total for Question 29 is 5 marks)

30 Solve algebraically the simultaneous equations

$$x + 7y = 14 \quad \leftarrow \text{1st equation}$$

$$3x - y = 9 \quad \leftarrow \text{2nd equation}$$

$$3x + 21y = 42 \quad \leftarrow$$

Multiplying all terms on both sides of the 1st equation by 3 to get the same number of x as the 2nd equation. This forms the 3rd equation

$$22y = 33 \quad \leftarrow$$

Subtracting the 2nd equation from the 3rd equation cancels out the x terms to get an equation just in terms of y. $3x - 3x = 0$, $21y - -y = 22y$, $42 - 9 = 33$. Then dividing both sides by 22 finds that $y = 1.5$

$$x + 7(1.5) = 14 \quad \leftarrow$$

Substituting 1.5 for y in the 1st equation. Subtracting $7(1.5)$ from both sides finds that $x = 3.5$

$$x = \dots\dots\dots 3.5$$

$$y = \dots\dots\dots 1.5$$

(Total for Question 30 is 3 marks)

TOTAL FOR PAPER IS 80 MARKS