

Please check the examination details below before entering your candidate information

Candidate surname		Other names	
Centre Number		Candidate Number	

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

Thursday 15 May 2025

Morning (Time: 1 hour 30 minutes) Paper reference **1MA1/1F**

Mathematics
PAPER 1 (Non-Calculator)
Foundation Tier



You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB or B pencil, eraser, 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 not be used.**

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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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 Simplify $e + e + e + e + e$

$e \times 5 = 5e$. It behaves similar to numbers: $2 + 2 + 2 + 2 + 2 = 2 \times 5 = 10$

5e

(Total for Question 1 is 1 mark)

- 2 Write $\frac{3}{4}$ as a decimal.

$$4 \overline{) 3.00} \begin{array}{r} 0.75 \\ \underline{3.00} \\ 0 \end{array}$$

Dividing the numerator by the denominator converts it to a decimal

0.75

(Total for Question 2 is 1 mark)

- 3 Change 60 millimetres into centimetres.

$$60 \div 10$$

1 cm = 10 mm. So dividing the 60 millimetres by 10 converts it to 6 centimetres

6

centimetres

(Total for Question 3 is 1 mark)

- 4 Write down a multiple of 8 that is between 25 and 35

8, 16, 24, 32...

32

(Total for Question 4 is 1 mark)

- 5 Angle A is 53°

What type of angle is angle A ?

Acute angles are less than 90°

Acute

(Total for Question 5 is 1 mark)

- 6 Samina works in a shop that sells pens.

The table shows the number of blue pens and the number of red pens Samina sold in each of three months.

Month	Blue pens	Red pens
April	33	20
May	40	14
June	27	15

- (a) Work out the total number of blue pens and red pens Samina sold in June.

$$\begin{array}{r} 27 \\ +15 \\ \hline 42 \\ 1 \end{array}$$

Adding the 27 blue pens in June and the 15 red pens in June finds that the total for June is 42 pens

42

(1)

Samina says,

“In these three months, in total, I sold more than twice as many blue pens as red pens.”

- (b) Is Samina correct?

You must show how you get your answer.

$$\begin{array}{r} 33 \\ +40 \\ +27 \\ \hline 100 \\ 1 \end{array}$$

Adding the blue pens for each month finds that a total of 100 blue pens were sold in these three months

$$\begin{array}{r} 20 \\ +14 \\ +15 \\ \hline 49 \\ \times 2 \\ \hline 98 \\ 1 \end{array}$$

Adding the red pens for each month finds that a total of 49 red pens were sold in these three months

Multiplying the total of the red pens by 2 finds that twice as many as the red pens is 98

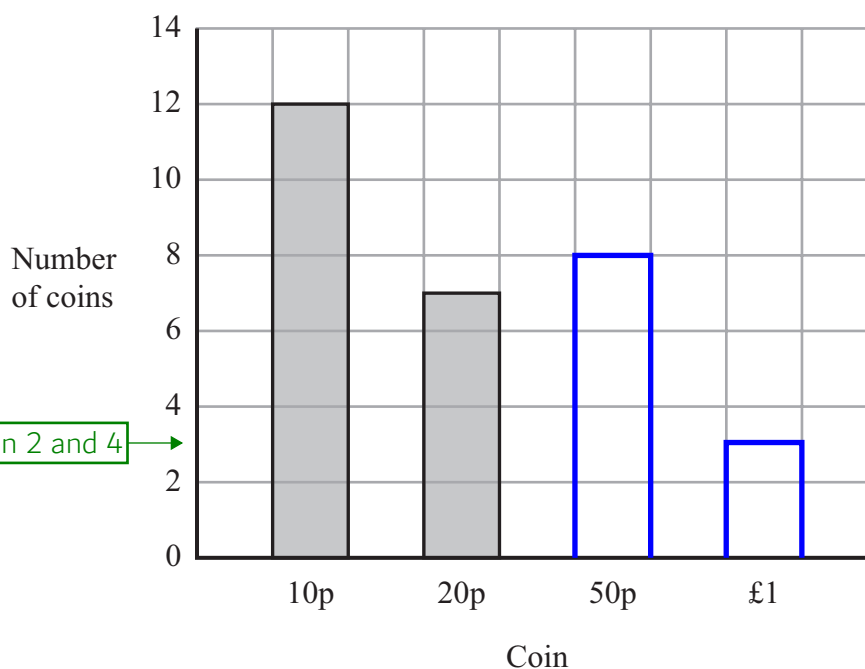
Yes The 100 blue pens is more than the 98 pens, which is twice the number of red pens

(3)

(Total for Question 6 is 4 marks)

- 7 There are only 10p coins, 20p coins, 50p coins and £1 coins in a bag.

The bar chart shows information about the number of 10p coins and the number of 20p coins in the bag.



There are eight 50p coins in the bag.

There are three £1 coins in the bag.

- (a) Use this information to complete the bar chart.

(2)

- (b) Show that the total amount of money in the bag is less than £10

$$12 \times 10 = 120$$

$$7 \times 20 = 140$$

$$8 \times 50 = 400$$

$$3 \times 100 = 300$$

Multiplying each of the numbers of coins by the coin in pence finds the total value of each type of coin. £1 = 100p

$$120$$

$$+140$$

$$+400$$

$$+300$$

$$960 \div 100 = £9.60$$

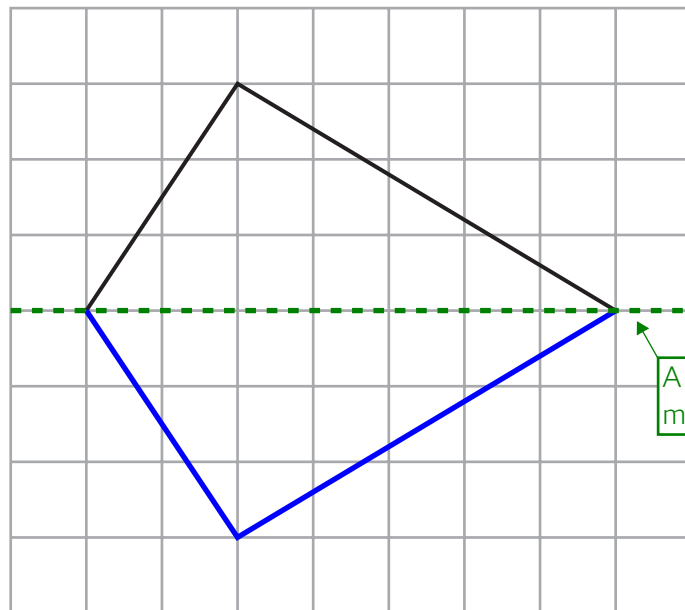
Adding all the totals finds that the overall total is 960p

£1 = 100p, so dividing the 960p by 100 converts it to £9.60, which is less than £10

(3)

(Total for Question 7 is 5 marks)

8 The diagram shows two sides of a kite.

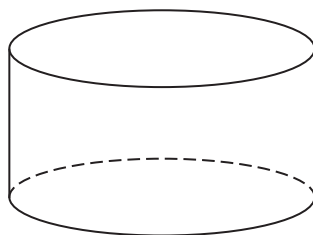


A kite is symmetrical. This must be the line of symmetry

(a) On the grid, complete the kite.

(1)

(b) What is the mathematical name of this solid shape?



Cylinder

(1)

(Total for Question 8 is 2 marks)

9 Greg is x years old.

Greg is 5 years older than Katy.

(a) Write down an expression, in terms of x , for Katy's age.

Katy's age is 5 less than Greg's age.
Subtracting 5 from x expresses 5 less than x

$$\frac{x - 5}{(1)}$$

Carl is twice as old as Greg.

(b) Write down an expression, in terms of x , for Carl's age.

Multiplying x by 2 is doing twice Greg's age. $x \times 2 = 2x$

$$\frac{2x}{(1)}$$

(c) Solve $4y = 12$

Dividing both sides by 4 eliminates the 4 on the left and gets y on its own. $12 \div 4 = 3$

$$y = \frac{3}{(1)}$$

(Total for Question 9 is 3 marks)

10 (a) Write 23 619 to the nearest 1000

The 3 is in the 1000s place. The 6 after the 3 causes the 3 to round up to a 4 then everything after it is set to 0 and is ignored

24000

(1)

(b) Work out an estimate for the value of 5.9×98.1

6×100

Rounding both numbers to 1 significant figure to make the estimate easier. This is basically rounding the 5.9 to the nearest whole number and rounding the 98.1 to the nearest ten

600

(2)

(Total for Question 10 is 3 marks)

11 (a) Work out $\frac{5}{8} - \frac{1}{4}$

$\frac{5}{8} - \frac{2}{8}$

Multiplying both the numerator and denominator of $\frac{1}{4}$ by 2 makes it into an equivalent fraction with 8 as the denominator

The numerators can be subtracted and the denominator stays the same

$\frac{3}{8}$

(2)

(b) Work out $\frac{2}{5}$ of 40

$40 \div 5$ ← Dividing the 40 by 5 finds that $\frac{1}{5}$ of 40 is 8

8×2 ← Multiplying the value of $\frac{1}{5}$ by 2 finds that $\frac{2}{5}$ are worth 16

16

(2)

(Total for Question 11 is 4 marks)

12 Here is part of a train timetable from Liverpool to Birmingham.

Liverpool	08 07	08 47	09 07
Runcorn	08 25	09 03	09 26
Crewe	08 53	09 22	09 55
Stafford	09 11	09 51	10 14
Wolverhampton	09 30	—	10 31
Birmingham	09 50	10 34	10 50

- (a) Which train should take the least time to go from Liverpool to Crewe?
You must show how you get your answer.

$$\begin{array}{r} 5^{13} \\ - 07 \\ \hline 46 \end{array}$$

← This finds that the time from 08 07 to 08 53 is 46 minutes

$$\begin{array}{r} 13 \\ + 22 \\ \hline 35 \end{array}$$

← It is 13 minutes from 08 47 to 09 00 then another 22 minutes from 09 00 to 09 22. So it takes 35 minutes from 08 47 to 09 22

$$\begin{array}{r} 5^{15} \\ - 07 \\ \hline 48 \end{array}$$

← This finds that the time from 09 07 to 09 55 is 48 minutes

08 47 ← This train takes 35 minutes from Liverpool to Crewe, which is less time than the others

(3)

Rose gets to the station in Wolverhampton at 09 25
She wants to catch the next train to Birmingham.

This train is delayed by 35 minutes.

- (b) How many minutes does Rose have to wait for the train?

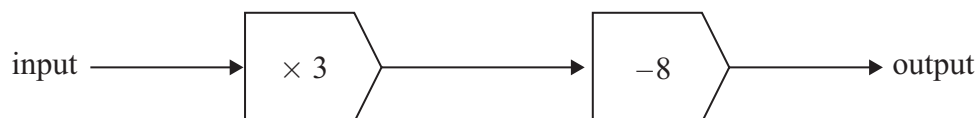
$$\begin{array}{r} 5 \\ + 35 \\ \hline 40 \\ 1 \end{array}$$

← Rose is in time for the 09 30 from Wolverhampton. 09 30 is 5 minutes after 09 25. Adding the 35 minutes delay to this 5 minutes finds that Rose has to wait 40 minutes

40 minutes
(2)

(Total for Question 12 is 5 marks)

13 Here is a number machine.



(a) Find the output when the input is 6

$6 \times 3 \leftarrow$ Taking the input and following the 1st step to get 18

$18 - 8 \leftarrow$ Taking the 18 and following the 2nd step to get 10

10

(1)

(b) Find the input when the output is -11

Doing the opposite operations in the opposite order to go from the output to the input

$-11 + 8 \leftarrow$ The opposite of -8 is $+8$. Adding 8 to -11 makes it less negative so it becomes -3

$-3 \div 3 \leftarrow$ The opposite of $\times 3$ is $\div 3$. If $3 \div 3 = 1$ then $-3 \div 3 = -1$

-1

(2)

(Total for Question 13 is 3 marks)

14 A road has a length of 1.6 kilometres.

The road is shown on a map with a scale of 1 : 20 000

Work out the length, in centimetres, of this road on the map.

$$1.6 \times 1000 \leftarrow 1 \text{ km} = 1000 \text{ m. So multiplying the 1.6 km by 1000 converts it to 1600 m}$$

$$1600 \times 100 \leftarrow 1 \text{ m} = 100 \text{ cm. So multiplying the 1600 m by 100 converts it to 160000 cm}$$

$$\frac{160000}{20000} \leftarrow \text{The 20000 is 20000 times greater than the 1. So dividing the 160000 by 20000 goes from the real length to the length on the map}$$

$$16 \div 2 \leftarrow \text{Dividing both the numerator and denominator by 10 4 times cancels out 4 0s and gives 16/2}$$

.....8..... centimetres

(Total for Question 14 is 3 marks)

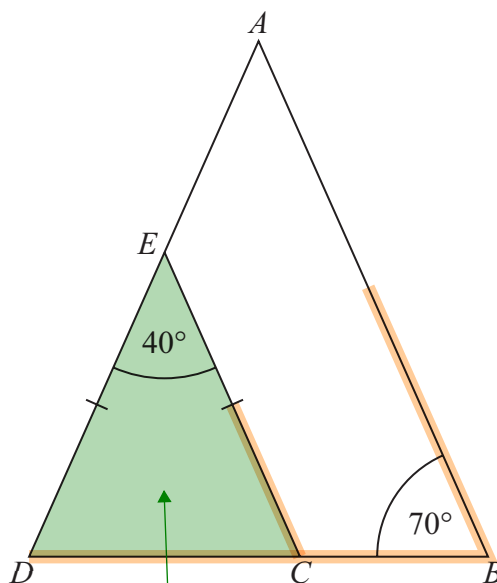
15 Work out 1.35×48

$$\begin{array}{r} 135 \\ \times 48 \\ \hline 1080 \\ 5400 \\ \hline 6480 \end{array} \leftarrow \text{Ignoring the decimal point}$$

There were 2 decimal places in the original numbers so bringing the decimal point back twice

64.8

(Total for Question 15 is 3 marks)



AED and BCD are straight lines.
 $ED = EC$

Working with this triangle to begin with.
 It is isosceles as it has two equal sides

Show that EC is parallel to AB .
 Give a reason for each stage of your working.

180

- 40

140

Subtracting the 40° from 180° leaves the total of the two base angles

0 7 0
 2 | 1 4 0

Dividing the total of the two base angles by 2 finds that one of the base angles is 70°

Angle $DCE = 70^\circ$ as angles in a triangle add up to 180° and base angles of an isosceles triangle are equal

Corresponding angles, so EC is parallel to AB

The corresponding angles are in the insides of the orange F-shape. Angle $DCE = \text{angle } DBA$, so they are corresponding

(Total for Question 16 is 4 marks)

17 Sam wants to use this recipe to make 15 pancakes.

Ingredients for 10 pancakes

100 g flour
200 ml milk
40 g butter
2 eggs

Sam has

200 g flour
250 ml milk
70 g butter
5 eggs

Does Sam have enough flour, enough milk, enough butter and enough eggs to make 15 pancakes?

You must show all your working.

5 additional pancakes are needed on top of the 10 pancakes to make 15 pancakes. 5 is half of 10. So working out half of all of the ingredients and adding this half on to the ingredients for 10 pancakes finds the amount of each ingredient needed

$$\begin{array}{r} 0 \ 5 \ 0 \\ 2 \overline{) 1 \ 0 \ 0} \end{array}$$

This finds that half of the 100 g flour is 50 g flour

$$\begin{array}{r} 100 \\ + 50 \\ \hline 150 \end{array}$$

Adding the 50 g flour to the 100 g flour finds that 150 g flour is needed. 200 g flour is enough

$$200 \div 2$$

This finds that half of the 200 ml milk is 100 ml milk

$$100 + 200 = 300$$

Adding the 100 ml milk to the 200 ml milk finds that 300 ml milk is needed. 250 ml milk is not enough

$$\begin{array}{r} 2 \ 0 \\ 2 \overline{) 4 \ 0} \end{array}$$

This finds that half of the 40 g butter is 20 g butter

$$\begin{array}{r} 40 \\ + 20 \\ \hline 60 \end{array}$$

Adding the 20 g butter to the 40 g butter finds that 60 g butter is needed. 70 g butter is enough

$$2 \div 2$$

This finds that half of the 2 eggs is 1 egg

$$1 + 2 = 3$$

Adding the 1 egg to the 2 eggs finds that 3 eggs are needed. 5 eggs is enough

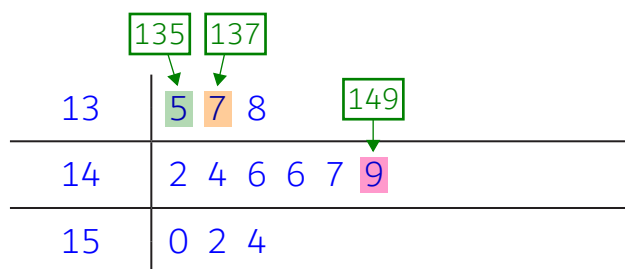
No, not enough milk

(Total for Question 17 is 3 marks)

18 Here are the heights, in cm, of 12 children.

146 135 142 150 138 149
152 146 137 154 147 144

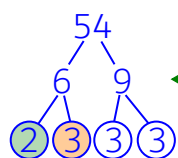
Show this information in a stem and leaf diagram.



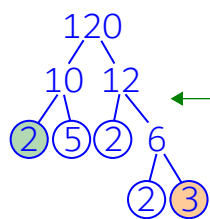
Key: $13|5 = 135$

(Total for Question 18 is 3 marks)

19 Find the highest common factor (HCF) of 54 and 120



Doing a factor tree to find 54 as a product of prime factors. So $54 = 2 \times 3 \times 3 \times 3$



Doing a factor tree to find 120 as a product of prime factors. So $120 = 2 \times 2 \times 2 \times 3 \times 5$

2×3

The highest common factor is what is shared by both of the product of prime factors. One 2 and one 3 are shared. Multiplying these finds the highest common factor

6

(Total for Question 19 is 2 marks)

20 There are only red counters, white counters, blue counters and green counters in a bag.

Chris is going to take at random a counter from the bag.

The table shows the probability that he will take a red counter and the probability that he will take a white counter.

Colour	red	white	blue	green
Probability	0.3	0.1	$2g$	g

There are twice as many blue counters as there are green counters in the bag.

(a) Work out the probability that Chris will take a blue counter.

Let g be the probability of green.
 $2g$ must be the probability of blue

$$0.3 + 0.1$$

Adding the probability of red and the probability of white finds that there is 0.4 total probability in the table so far

$$\begin{array}{r} 1.0 \\ -0.4 \\ \hline 0.6 \end{array}$$

It is certain to get one of the colours so the probabilities must all add up to 1. So subtracting the 0.4 from 1 finds that the probabilities for blue and green must add up to 0.6

$$3 \overline{) 0.6}$$

$2g + g = 3g = 0.6$. Dividing both sides by 3 finds that $g = 0.2$

$$0.2 \times 2$$

Multiplying the value of g by 2 finds that $2g$ is 0.4, which is the probability of blue

$$0.4$$

(3)

There are 45 red counters in the bag.

(b) Work out the total number of counters in the bag.

$$0.3T = 45$$

Let T be the total number of counters. Multiplying T by the probability of red expresses the number of red counters, which is 45

$$\frac{45}{0.3}$$

Dividing both sides by 0.3 eliminates the 0.3 on the left and gets T on its own

$$3 \overline{) 150}$$

Multiplying both the numerator and denominator by ten gives $450/3$ and eliminates the decimal on the denominator

$$150$$

(2)

(Total for Question 20 is 5 marks)

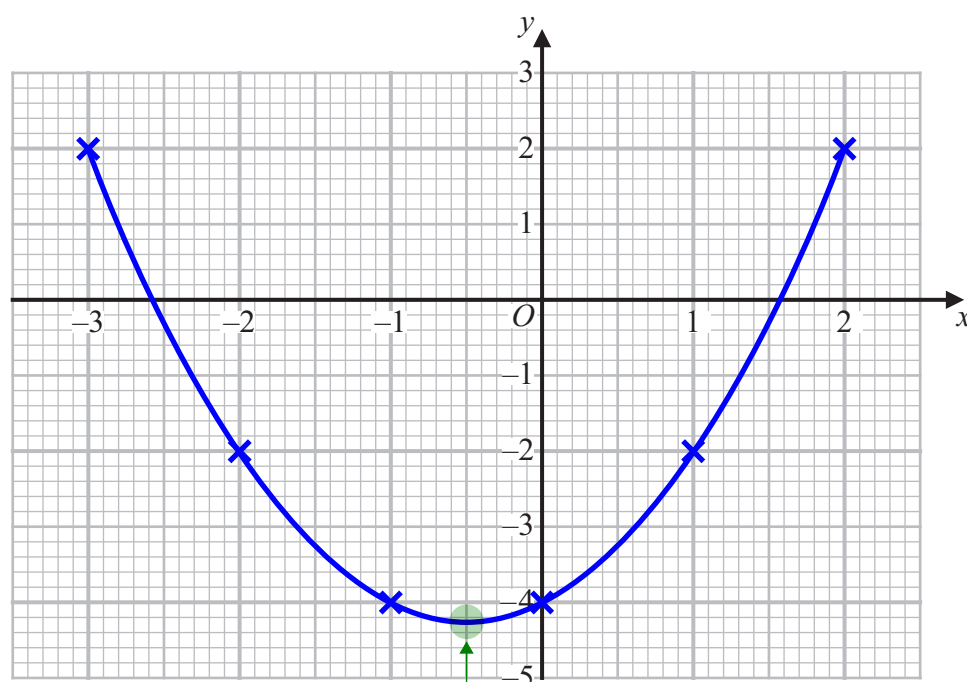
21 (a) Complete the table of values for $y = x^2 + x - 4$

x	-3	-2	-1	0	1	2
y	2	-2	-4	-4	-2	2

$(-2)^2 = 4$, then $4 + (-2) = 2$, then $2 - 4 = -2$.
 $0^2 = 0$, then $0 + 0 = 0$, then $0 - 4 = -4$.
 $1^2 = 1$, then $1 + 1 = 2$, then $2 - 4 = -2$.
 $2^2 = 4$, then $4 + 2 = 6$, then $6 - 4 = 2$

(2)

(b) On the grid, draw the graph of $y = x^2 + x - 4$ for values of x from -3 to 2



This is the turning point

(2)

(c) Write down the coordinates of the turning point of the graph of $y = x^2 + x - 4$

(-0.5 , -4.25)

(1)

(Total for Question 21 is 5 marks)

22 There are 280 chocolates in a box.

There are only dark chocolates, milk chocolates and white chocolates.

$\frac{1}{7}$ of the 280 chocolates are dark chocolates.

The number of milk chocolates : the number of white chocolates = 1 : 3

The number of white chocolates : the number of dark chocolates = n : 1

(a) Work out the value of n .

You must show all your working.

$$\begin{array}{r} 0\ 4\ 0 \\ 7 \overline{) 280} \end{array}$$

Dividing the 280 chocolates by 7 finds that $\frac{1}{7}$ of the chocolates is 40, so there are 40 dark chocolates

$$\begin{array}{r} 280 \\ - 40 \\ \hline 240 \end{array}$$

Subtracting the 40 dark chocolates from the 280 chocolates finds that the total of the milk and white chocolates is 240

$$\begin{array}{r} 0\ 6\ 0 \\ 4 \overline{) 240} \end{array}$$

$1 + 3 = 4$ parts in total in the 1 : 3 ratio. These 4 parts represent 240 chocolates. So dividing the 240 by 4 finds that 1 part of the ratio is worth 60 chocolates

$$\begin{array}{r} 60 \\ \times 3 \\ \hline 180 \end{array}$$

Multiplying the value of 1 part of the ratio by 3 finds that the 3 parts represent 180 chocolates, so there are 180 white chocolates

$$180 : 40$$

Writing the ratio of the number of white chocolates : the number of dark chocolates

$$\begin{array}{r} 0\ 4.\ 5 \\ 4 \overline{) 18.0} \end{array}$$

Dividing both sides of this ratio by 40 gets 1 on the right. $180 \div 40 = 18 \div 4 = 4.5$

$$n = \frac{4.5}{(5)}$$

10 milk chocolates from the box are eaten.

(b) Does this affect your answer to part (a)?

Give a reason for your answer.

No, there are the same numbers of white and dark chocolates

So the ratio of the number of white chocolates : the number of dark chocolates does not change and n will be the same

(1)

(Total for Question 22 is 6 marks)

- 23 Work out $5.7 \times 10^2 + 9.8 \times 10^3$
Give your answer in standard form.

$$0.57 \times 10^3$$

Dividing the 5.7 by 10 and adding 1 to the index of the 10^2 changes the 5.7×10^2 to 0.57×10^3 so that it has the same power of ten as 9.8×10^3

$$9.80$$

$$+0.57$$

$$10.37 \times 10^3$$

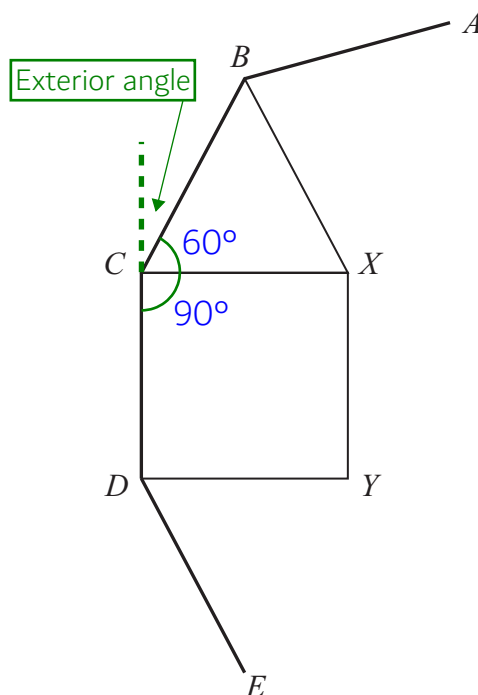
$0.57x + 9.8x = (0.57 + 9.8)x$. The numbers before the powers of ten can now be added and the power of ten stays the same

Dividing the 10.37 by 10 and adding 1 to the index of 10^3 gets the 1st number at least 1 and less than 10, so that it is now in standard form

$$1.037 \times 10^4$$

(Total for Question 23 is 3 marks)

24 AB , BC , CD and DE are four sides of a regular polygon with n sides.



BCX is an equilateral triangle.

$CDYX$ is a square.

Work out the value of n .

You must show all your working.

$$\begin{array}{r} 0\ 6\ 0 \\ 3 \overline{) 1\ 8\ 0} \end{array}$$

There are 180° in total in a triangle. Dividing this 180° finds that each angle in the equilateral triangle is 60° , as all three angles are equal

$$\begin{array}{r} 90 \\ +60 \\ \hline 150 \end{array}$$

The angle in the square is 90° . Adding the angle in the equilateral triangle finds that the interior angle of the polygon is 150°

$$\begin{array}{r} 1\ 8\ 0 \\ -1\ 5\ 0 \\ \hline 0\ 3\ 0 \end{array}$$

There are 180° around a point on a straight line. The interior angle and exterior angle lie around a point on a straight line. So subtracting the 150° interior angle from 180° finds that the exterior angle is 30°

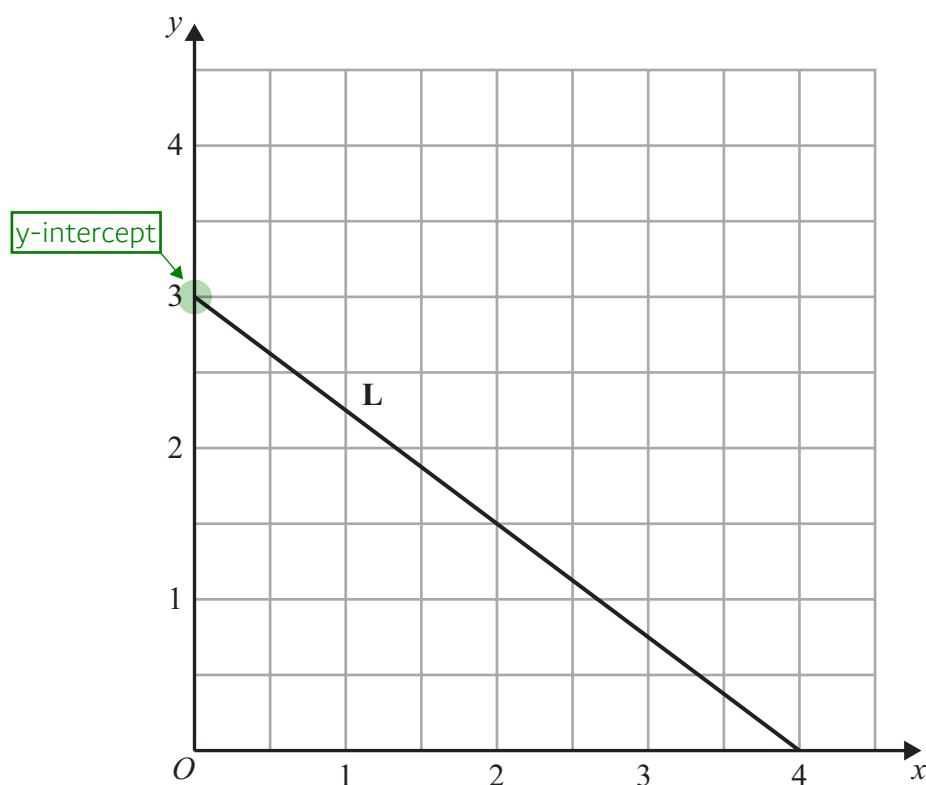
$$\begin{array}{r} 1\ 2 \\ 3 \overline{) 3\ 6} \end{array}$$

The exterior angles of any polygon add up to 360° in total. So dividing 360° by each 30° exterior angle (which are all the same as the shape is regular) finds that there are 12 exterior angles. $360 \div 30 = 36 \div 3$. So there must be 12 sides of the polygon

$$n = \dots\dots\dots 12$$

(Total for Question 24 is 4 marks)

25 The straight line **L** is shown on the grid.



Find an equation for **L**.

Give your answer in the form $y = mx + c$

$y = mx + c$, where m is the gradient and c is the y-intercept.

Gradient = rise/run. Picking the two endpoints of the line. The rise is -3 as it goes down from 3 to 0 and the run is 4 as it goes across from 0 to 4. So the gradient is $-3/4$.

The y-intercept is 3

$$y = -\frac{3}{4}x + 3$$

(Total for Question 25 is 3 marks)

Turn over for Question 26

$$26 \quad \mathbf{c} = \begin{pmatrix} 7 \\ 4 \end{pmatrix} \quad \mathbf{d} = \begin{pmatrix} 2 \\ -1 \end{pmatrix}$$

x-component
y-component

Work out $2\mathbf{c} + 3\mathbf{d}$

Give your answer as a column vector.

$$2 \times 7 + 3 \times 2 \leftarrow 2 \times \text{x-component of } \mathbf{c} + 3 \times \text{x-component of } \mathbf{d}$$

$$14 + 6 \leftarrow \text{So the x-component of the final column vector is } 20$$

$$2 \times 4 + 3 \times -1 \leftarrow 2 \times \text{y-component of } \mathbf{c} + 3 \times \text{y-component of } \mathbf{d}$$

$$8 - 3 \leftarrow \text{So the y-component of the final column vector is } 5$$

$$\begin{pmatrix} 20 \\ 5 \end{pmatrix}$$

(Total for Question 26 is 2 marks)

TOTAL FOR PAPER IS 80 MARKS