

GCSE (9–1)

Examiners' report

MATHEMATICS

J560

For first teaching in 2015

J560/02 November 2022 series

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Introduction

Our examiners' reports are produced to offer constructive feedback on candidates' performance in the examinations. They provide useful guidance for future candidates.

The reports will include a general commentary on candidates' performance, identify technical aspects examined in the questions and highlight good performance and where performance could be improved. A selection of candidate answers is also provided. The reports will also explain aspects which caused difficulty and why the difficulties arose, whether through a lack of knowledge, poor examination technique, or any other identifiable and explainable reason.

Where overall performance on a question/question part was considered good, with no particular areas to highlight, these questions have not been included in the report.

A full copy of the question paper and the mark scheme can be downloaded from OCR.

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Paper 2 series overview

This non-calculator paper is the second of the three papers taken by Foundation candidates for the Mathematics GCSE (9-1) specification. There were fewer candidates sitting the November series than in previous years due to factors relating to the Summer 2022 examination series.

Numerical methods were evident throughout candidates' papers. One area to highlight is the incorrect use of place value when doing basic arithmetic, this was seen positively when in context, e.g., Question 10, but less so in Question 3 (a) and (b) when not in a contextual situation.

Many candidates found many of the later questions in the paper difficult to access, particularly those with ratio, probability trees, indices, and Pythagoras' theorem. Another area that many candidates struggled with were the judgemental questions, which require justification of an answer. Candidates often did not answer the question that was set.

Candidates were given a formulae sheet to use in the examination. It was evident that this was not used at the appropriate times to aid the majority of candidates' responses.





One area candidates found challenging were the relationships between fractions, decimals and percentages. Candidates found it difficult to convert between the different forms when required. They also struggled to show appropriate steps when linking these to other topic areas such as probability. They particularly struggled with these questions when in contextual situations - when there were no prompts to write in fraction form.


Presentation overall was good, but some candidates required improvement. Appropriate use of basic equipment, such as a ruler, compass, and a pencil, was absent for many. It was evident that many drawing questions were completed in pen and not pencil, which caused problems at times.

Candidates who did well on this paper generally did the following:	Candidates who did less well on this paper generally did the following:
<ul style="list-style-type: none"> • answered the majority of questions • showed each step of their working • were able to link fractions, decimals and percentages • used the formulae sheet which accompanied the examination • used appropriate equipment: ruler, compass and pencil • checked calculations using reverse methods. 	<ul style="list-style-type: none"> • did not attempt most of the questions • struggled to use place value correctly • attempted division instead of using a fraction • did not use the formulae sheet provided • used a pen when drawing sketches and diagrams • made basic numerical errors when adding and subtracting • did not read larger questions more than once to confirm their understanding of the information.

Question 1 (a)

1 The pictogram shows the number of students absent from a school in a particular week.

Monday	
Tuesday	
Wednesday	
Thursday	
Friday	

Key:  represents 4 students

(a) Harper says

The pictogram shows 2 circles for Monday.
Therefore 2 students were absent on Monday.

Explain what Harper has done wrong.
Write down the correct number of students who were absent on Monday.

Harper has

.....

Correct number [2]

Many candidates were able to access this question. Almost all candidates were able to identify the correct number as 8. Some candidates struggled to explain what 'Harper has done wrong' and instead described how to find the correct answer for Monday.

Question 1 (b)

(b) 5 students were absent on Friday.

Complete the pictogram above to show this information. [1]

Most answers were correct.

Question 2 (a) (i) and (a) (ii)

2 (a) Complete each statement by writing the missing power in the box.

(i) $6 \times 6 \times 6 = 6^{\square}$ [1]

(ii) $16 = 2^{\square}$ [1]

These questions were well answered by most candidates, with the large majority getting the correct answer to (a) (i). Candidates incorrectly answering (a) (ii) gave 8.

Question 2 (b)

(b) Work out.

$$5^2 \times \sqrt{36}$$

(b) [3]

Most candidates were able to calculate the value of 5^2 or the value of $\sqrt{36}$, scoring at least one method mark. Several candidates incorrectly gave 10 for 5^2 . A small number of candidates wrote down that $\sqrt{36} = 6 \times 6$ but then used 36 in their calculation, so 25×36 was often seen.

Question 3 (a) and (b)

3 Work out.

(a) $0.35 + 6.2$

(a) [1]

(b) $4.8 \div 8$

(b) [1]

These questions were attempted by most candidates. The common errors involved place value. The most common error seen in 3 (b) was an answer of 6, usually from the use of a 'bus stop' division method ($x \overline{)y}$).

Question 4 (a)

4 (a) Write $\frac{19}{4}$ as a mixed number.

(a) [1]

Question 4 (b)

(b) Write $1\frac{7}{9}$ as an improper fraction.

(b) [1]

Both parts were answered reasonably well.

Question 4 (c)

(c) Sam says that $\frac{7}{8}$ written as a decimal is 0.78.

Is Sam correct?

Show how you decide.

..... because

..... [2]

This was the most challenging part of Question 4. Many candidates tried to divide but executed unsuccessfully, often attempting $7\overline{)8}$. Candidates were unsure what approach to take often looking to do something with 0.78 rather than $\frac{7}{8}$.

$\frac{78}{100}$ was often seen and this scored 1 mark but 0.875 was seen infrequently. Attempts to convert $\frac{7}{8}$ to a fraction with 100 as the denominator was seen, but a decimal in a fraction put many off from continuing and comparisons with $\frac{78}{100}$ were rarely made.

Question 5

5 Write 36 as a product of prime factors.

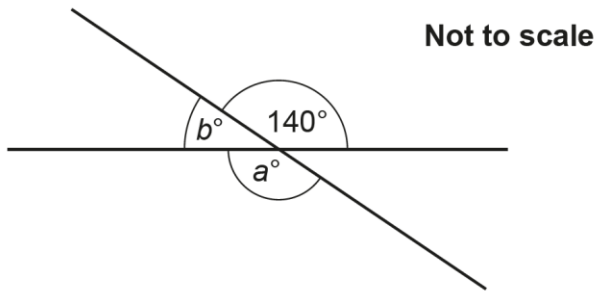
..... [2]

Most successful candidates attempted a factor tree, and many were able to gain at least 1 mark. Few ladder methods were seen.

Some completed the factor tree successfully but then stated the answer incorrectly as 2, 3 or listed all the factors with or without indices, e.g., 2, 2, 3, 3, or $2^2, 3^2$. Some included an addition operator, $2^2 + 3^2$. It was common to see an error from a 6×6 factor tree of 3×3 and 3×3 instead of 2×3 and 2×3 . Non scoring factor trees had errors in the first branch of 2 and 12 or 2 and 16. A common error was to list factor pairs for 36.

Question 6 (a) and (b)

6 The diagram shows two intersecting straight lines.



(a) Find the value of a .
Give a reason for your answer.

$a = \dots\dots\dots$ because $\dots\dots\dots$
 $\dots\dots\dots$ [2]

(b) Find the value of b .
Give a reason for your answer.

$b = \dots\dots\dots$ because $\dots\dots\dots$
 $\dots\dots\dots$ [2]

Many candidates were able to attempt the numerical calculations to find a and b . Part (a) was often correctly answered as 140° , but candidates were less successful at obtaining the answer of 40° for part (b).

Candidates struggled to justify their reasoning in both parts of the question, often leaving out key words or giving the calculations as their justification. Very few candidates knew or were able to recall the word 'vertically' for 'vertically opposite angles are equal' but 'opposite angles' was accepted.

The reason 'angles at a point or in a full turn' was common for part (b). Often candidates using this reasoning gave an incorrect answer of 80° .

Assessment for learning



Candidates need to know the reasons as well as how to find the size of the angle.

Angles on a straight line = 180°

Angles at a point or in a full turn = 360°

Vertically opposite angles are equal.

Angle Justification

Candidates do not need to fill the answer space on the question paper. Bullet point statements to justify the angle size calculated are perfectly acceptable.

Question 7

7 Find the value of $4x + 5y$ when $x = 3$ and $y = -2$.

..... [2]

Most candidates attempted this question and managed to score at least M1 for either calculating $4x = 12$ or $5y = -10$. Many candidates gave an incorrect answer of either 22 or -22, often from correct working.

A small number of candidates reached the values of 12 and -10 but included the x and y in their answer as an expression, $12x - 10y$. Marks were not credited in this instance.

Question 8 (a)

8 (a) Write 65% as a fraction in its simplest form.

(a) [2]

Most candidates were given M1 for $\frac{65}{100}$. Many candidates had a problem simplifying the fraction due to 2 not being a common factor.

Attempts at division were seen often, with candidates trying to perform $100 \div 65$.

Question 8 (b)

(b) 25 people entered a competition.
4 of them won a prize.

Work out the percentage of people that won a prize.

(b) % [2]

Candidates who wrote the fraction $\frac{4}{25}$ were the most successful in this question. Converting this to an equivalent fraction over 100 was not carried out successfully by many. Attempts at $4 \div 25$ and $25 \div 4$ were both seen.

Candidates who did not see the link between fractions and percentages, and instead attempted to calculate a percentage of 25, often struggled. Some tried to find 10% or 1% of 25 and others found 10% and 1% of 4.

Question 8 (c)

(c) Increase 250 by 20%.

(c) [3]

The most popular method seen in this question was to find 10%, then double it for 20%, and add this to 250. Some candidates attempted 1.2×250 but often made errors with place value.

Candidates that made arithmetic errors but did not show their working often scored 0 as method marks could not be credited.

Assessment for learning



When using non-calculator methods for finding percentages, candidates should show all the steps in their calculation.

e.g. $100\% = 250$

$\div 10$ $\div 10$

$10\% = 25$

$\times 2$ $\times 2$

$20\% = 50$

Question 9 (a)

9 (a) By writing each number correct to 1 significant figure, find an estimate for 79.8×3.1 .

(a) [2]

Many candidates were able to round to 1 significant figure, scoring at least B1 for one correct rounding. A common error was to give 240 correct to 1 significant figure, stating 200 as the final answer.

Question 9 (b)

(b) Jamie works out 79.8×3.1 on a calculator.
Jamie's answer is 2473.8.

Do you think Jamie has used their calculator correctly?
Explain why.

..... because

..... [1]

Many candidates referred to the full stop as a problem, implying a second decimal point. Many answers were too vague, such as 'the answer is too high'. Many candidates did not see the link between parts (a) and (b). Others tried to work out the answer to 79.8×3.1 , usually incorrectly, to use this as a justification.

Question 10

- 10** Ashley has £7 to spend on fruit.
The table shows the prices.

Pineapple (each)	£1.15
Bananas (for 1 kilogram)	70p
Strawberries (for a 200g pack)	£1.30

Ashley buys 2 pineapples and 3 kilograms of bananas.
Ashley spends the remaining money on strawberries.

Work out the **mass, in grams**, of strawberries that Ashley buys.
You must show your working.

..... g [6]

Many candidates set out their working clearly, showing every step required to get to the correct answer, and many scored the full 6 marks. Some candidates did not provide a complete solution. As the question states 'You must show your working' it is essential to communicate each calculation required for each step, however simple they seem.

Errors seen included calculating the cost of 2 pineapples as £2.20 or working out 2 kg of banana. Some made errors subtracting £4.40 from £7 with the results £3.60 and £3.40 often seen. Many candidates avoided using division so $£1.30 + £1.30 = £2.60$ was commonly seen. Candidates who made an error in getting to their value of £2.60 were often able to gain follow through marks for finding their correct number of packets of strawberries and hence their correct weight. Some did not consider that strawberries were sold in 200g packs and incorrectly attempted to find an exact weight.

'You must show your working.'

A limited response in these questions can often be the difference between 2 or 3 marks and 6 marks. In Question 10, if 400g was seen with insufficient working the candidate scored 2 special case marks.

These types of questions are in every examination series, so candidates should be made aware that all workings must be shown.

Exemplar 1

$$\begin{array}{r}
 1.15 \\
 0.70 \\
 6.70 \\
 0.70 \\
 \hline
 3.25 \\
 2
 \end{array}$$

$$\begin{array}{r}
 6.9 \\
 7.00 \\
 3.25 \\
 \hline
 3.75
 \end{array}$$

$$\begin{array}{r}
 1.30 \\
 1.30 \\
 \hline
 2.60 \\
 3.75 \\
 \hline
 2.60 \\
 \hline
 1.15
 \end{array}$$

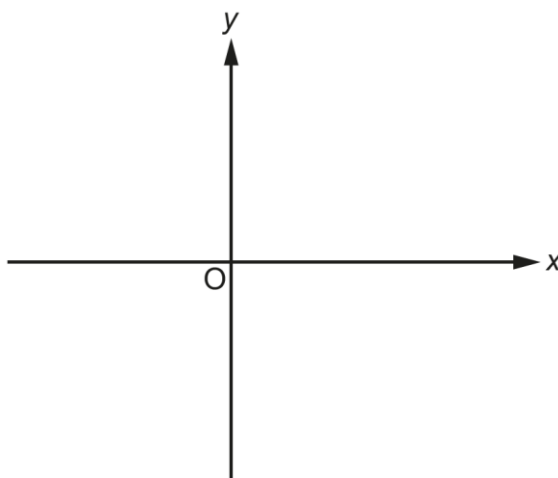
$$\begin{array}{r}
 1.30 \\
 1.30 \\
 1.30 \\
 \hline
 3.90
 \end{array}$$

..... 500 ~~400~~ g [6]

In this response, the candidate has attempted to add pineapples and bananas, but they have only included one pineapple, so score M0A0. They proceed to subtract their total from £7 which scores M1. They then list multiples of £1.30 to find how many strawberries they could buy. This scores M1. The final answer of 500 is incorrect so this response scores a total of 2 marks. If the original answer of 400 had been given then a follow through A1 would have been scored.

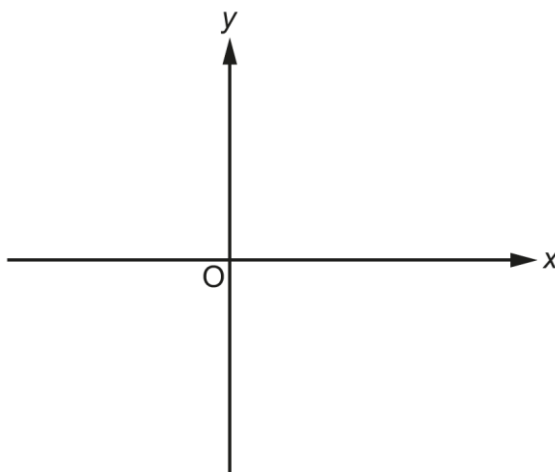
Question 11 (a), (b) and (c)

- 11 (a) Sketch the graph of $y = -2$.
Show clearly the value of any intercepts.



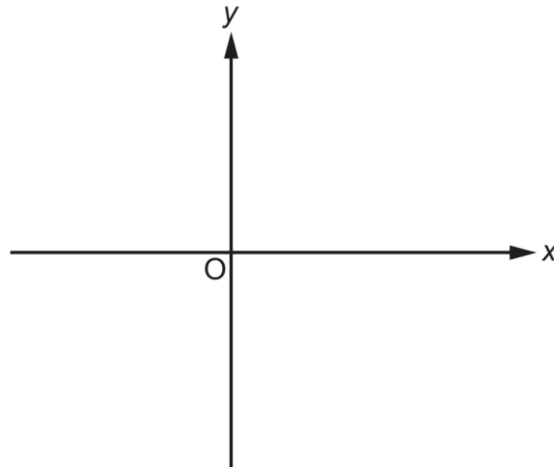
[2]

- (b) Sketch the graph of $y = x - 3$.
Show clearly the value of any intercepts.



[3]

(c) Sketch the graph of $y = x^2$.



[1]

Candidates found all parts of this question challenging and there were a significant number of no responses across all 3 parts.

Part (a) was attempted the best with 1 mark commonly given for a horizontal line below the x-axis. Some labelled their line with the equation $y = -2$ but very few successfully indicated -2 as the y-intercept.

In part (b) it was more common to see a line with a negative gradient. Some sketched a line with a positive gradient and scored a mark. Identifying the intercepts proved challenging. Some numbered scales on both axes rather than labelling just the key crossing points. This often resulted in inaccuracy where lines crossed between, e.g., -2 and -3 on the y-axis rather than exactly passing through (0, -3).

It was very rare to see any curves in part (c) and these were not typically centred on (0, 0). Some were drawn completely in the first quadrant, and a few were drawn with a minimum point below (0, 0).

Question 12 (a) and (b)

12 Multiply out.

(a) $3(x + 1)$

(a) [1]

(b) $3d(d - 2)$

(b) [2]

Candidates were able to access both parts of this question.

In part (b) partial marks were often credited for one correct term, $3d^2$ or $-6d$.

In both parts many candidates gave an expression with only one term, having added or subtracted unlike terms. In part (a) $6x$ was commonly seen and in part (b) $-3d^2$.

Exemplar 2

(b) $3d(d-2)$

$4d^2 - 6d$

$4d^2 - 6d$

(b) $-2d^3$ [2]

In this exemplar the candidate has correctly expanded the second part of the bracket as $-6d$, which scored B1. As seen in many responses, incorrect subtracting of the algebraic expression resulted in an incorrect answer of one term.

Question 13 (a)

13 Work out.

(a) $\frac{3}{7} \times 2$

(a) [1]

The vast majority of candidates gave the equivalent fraction of $\frac{6}{14}$ as their answer, incorrectly multiplying the denominator by 2.

Question 13 (b)

(b) $\frac{2}{3} - \frac{1}{4}$

(b) [2]

Many candidates identified the need for a common denominator but few executed this successfully.

Common incorrect approaches involved subtracting the numerators and denominators to give $\frac{1}{-1}$, and not changing the numerators to make equivalent fractions before subtracting to give $\frac{1}{12}$.

Equivalent Fractions

Instead of focusing on a 'method' to add or subtract fractions, develop understanding by building on the candidates' prior knowledge of equivalent fractions. This should eradicate the mistakes in method often seen here.

Exemplar 3

$$(b) \frac{2}{3} - \frac{1}{4}$$

$$\frac{2 \times 2}{4 \times 3} - \frac{1 \times 2}{4 \times 3}$$

$$= \frac{2}{12} - \frac{1}{12}$$

$$\frac{2}{12} - \frac{1}{12} = \frac{3}{12}$$

(b) $\frac{3}{12}$ [2]

In this exemplar the candidate knows a common denominator is needed but their 'method' has not retained the equivalence of the fractions. This response scored no marks.

Question 14

14 Solve.

$$6x - 9 = 27 - 4x$$

$x =$ [3]

Very few candidates gained full marks on this question. Most candidates struggled to use inverse operations and very few showed any kind of method to solve.

The most common error made by candidates was attempting to remove the $-4x$ on the right-hand side of the equation by subtracting $4x$, rather than adding $4x$ to both sides. Very few candidates managed to progress the equation successfully beyond this first step. Marks were most often gained for either reaching 'a multiple of $x = 36$ ', or for reaching $ax = b$ followed by $x = \frac{b}{a}$. Occasionally both were seen together with $2x = 36$ and then $x = \frac{36}{2} = 18$.

Question 15

- 15** Kai invests £600 at a simple interest rate of $r\%$ each year.
After 5 years, Kai's investment is worth £690.

Find the value of r .

$r = \dots\dots\dots$ [4]

Candidates often found this question challenging because of its reverse nature. Two common approaches were seen. Some found the total amount of money for each year (£18) while others found the total percentage over the 5 years (15%). Most candidates who scored on this question were credited M2 for either 15% or £18. Several candidates scored M1 for finding the £90 of interest.

A few candidates attempted compound interest although simple interest was listed on the advanced information.

Question 16

16 The diagram shows part of a regular 12-sided polygon.




For this polygon, find the ratio of the size of one exterior angle to the size of one interior angle.
 Give your answer in its simplest form.
 You must show your working.

..... : [5]

Candidates that attempted this question were often able to correctly find the exterior angle by $360^\circ \div 12 = 30^\circ$. Subsequent working often indicated that this result had been mistaken for an interior angle. Some candidates then used angles at a point to find the 'exterior angle', deducting 30° from 360° .

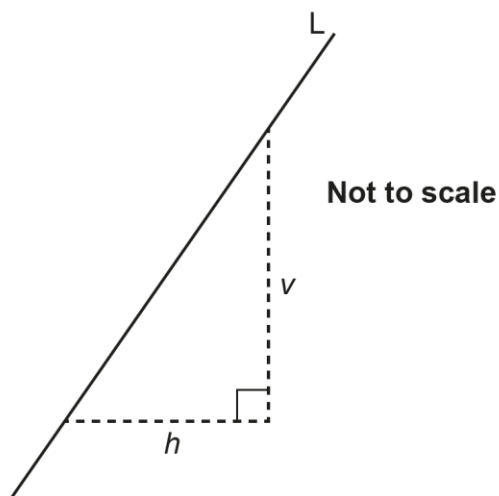
Some candidates incorrectly attempted to find the total of the 12 interior angles (1800°) but they frequently made numerical errors.

Misconception

 An exterior angle is not $360^\circ - \text{size of an interior angle}$.
 interior angle + exterior angle = 180°

Question 17 (a)

17 A straight line, L, is shown below.



(a) Write down the ratio $v : h$ when the gradient of line L is 4.

(a) : [1]

Question 17 (b)

(b) Find the gradient of line L as a fraction in its simplest form when $v : h = 14 : 6$.

(b) [2]

Candidates found both parts of this question challenging and very few responses were seen.

Question 18

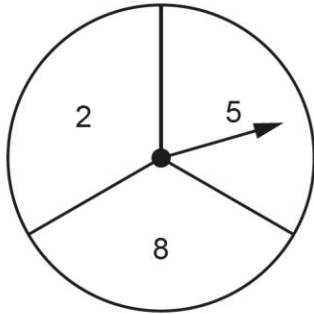
18 Find all the possible integer values that satisfy the inequality $4 \leq 2x < 10$.

..... [3]

Few candidates showed a method to solve this double inequality. Very few candidates managed to write the inequality in terms of x . The most common attempt was to use substitution to find values that worked. These candidates often gave 3 and 4 but misread the inequality sign and missed 2, so scored B2.

Question 19 (a) and (b)

19 Azmi has a fair spinner numbered 2, 5 and 8.



Azmi spins the spinner twice and adds the two scores to get a total.

(a) Complete the table to show all of the possible totals.

		First spin		
		Total	2	5
Second spin	2	4	7	
	5	7	10	
	8		13	16

[1]

(b) Find the probability that the total is a square number.

(b) [2]

Part (a) was often answered correctly. A few multiplied the two scores instead of adding. Several candidates were able to follow through the values in their table to answer part (b). Many candidates struggled to identify square numbers. Often candidates incorrectly gave 10 and 7 as square numbers, resulting in an incorrect probability.

Question 20 (a) and (b)

20 Layla and Jamal open a box of sweets.
Layla and Jamal share all of the sweets in the ratio 2 : 3.

(a) Write down the fraction of the sweets that Layla receives.

(a) [1]

(b) Layla eats some of **her** sweets.
She is then left with 18% of the sweets that were in the box.

Work out the percentage of **her** sweets that Layla has eaten.

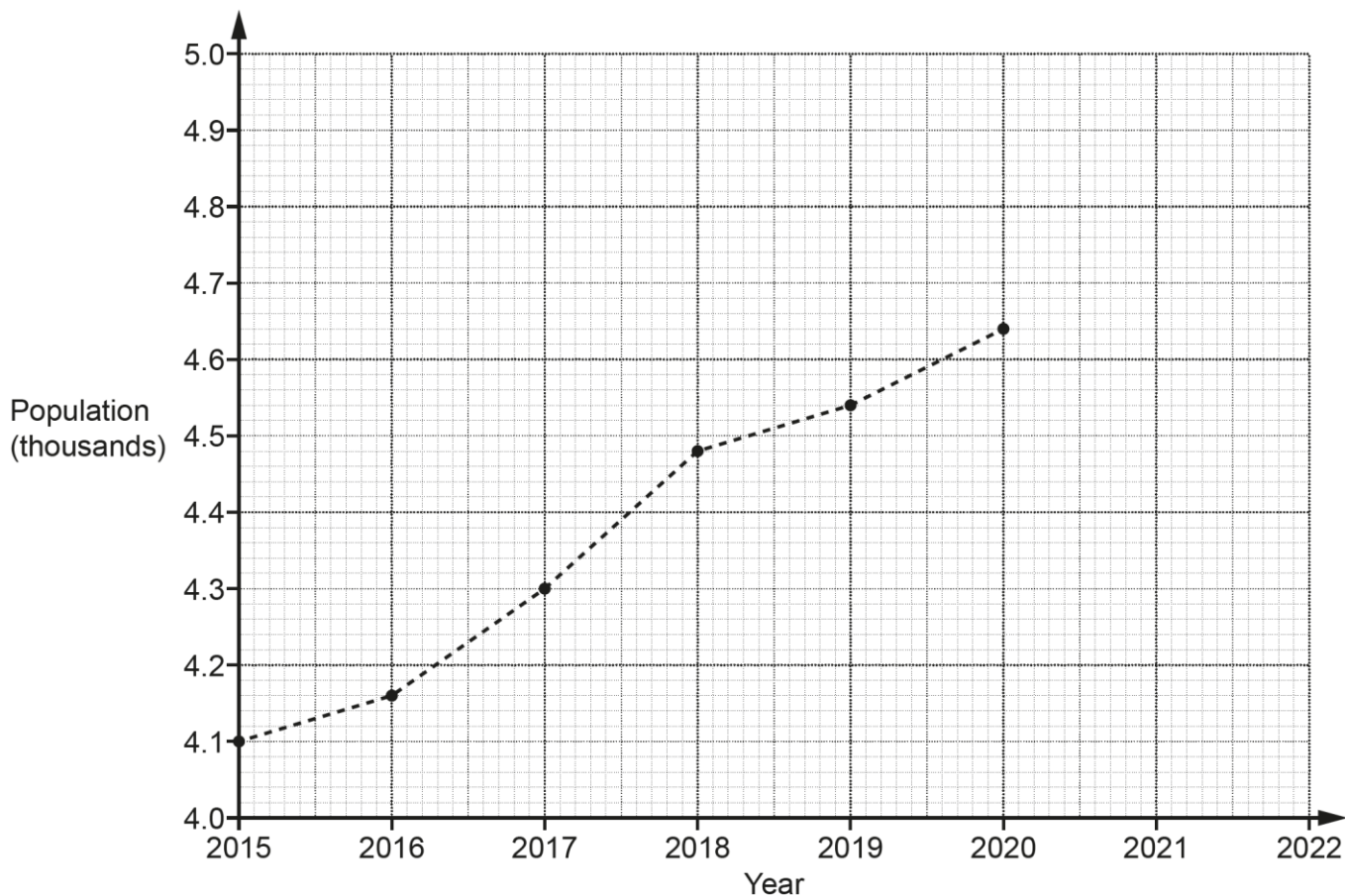
(b) % [4]

Most candidates successfully answered part (a). The most common incorrect fraction given was $\frac{2}{3}$.

Part (b) proved too demanding for most candidates. A very common incorrect attempt was $100 - 18 = 82$. Occasionally $\frac{2}{5}$ was converted to 40% or the number of Layla's sweets was stated as 40. This often led to attempts to find 18% of 40, as candidates confused Layla's sweets with the total sweets. A few candidates scored 2 marks for stating $40 - 18 = 22$ but then did not proceed to work out 22 out of 40 as a percentage.

Question 21 (a)

21 The graph shows information about the population of a village.



(a) The population of the village in 2021 was 4740.
Plot this point on the graph.

[1]

Most candidates plotted the point accurately. Some accuracy was lost by candidates that made their points or crosses too big.

Some candidates miscalculated each small square on the vertical axis as 10 rather than 20, and some plotted the correct height but only a centimetre to the left, not in line with 2021.

Question 21 (b)

(b) Work out the increase in the population of the village between 2016 and 2018.

(b) [2]

There was a lot of correct answers of 320 seen with the subtraction $4480 - 4160$ stated. Common errors included misreading the scale, such as 4490 for 2018 and finding the difference between 2016 and 2017. Some candidates earned a mark for stating an answer which included the figures 32. An answer of 0.32 often came from subtracting 4.16 from 4.48 when reading straight from the vertical scale and not converting to thousands.

Question 21 (c)

(c) Rowan says that there was a huge increase in the population of the village between 2015 and 2020.

Describe how Rowan may have been misled by the graph.

.....
..... [1]

This part was difficult for candidates to interpret and it was very rare for a correct comment about only part of the vertical scale was shown, e.g., 'vertical axis doesn't start from 0.' Most comments generally referred to either there only being a small increase, or to the steepness of the line. Reference to both, required for the mark, was usually not seen.

Several candidates commented that the scale was in decimals but meant thousands, or that the scale was in thousands but only went up in hundreds. Others just referred to the line continuously rising. Other non-scoring comments referred to a line of best fit or mentioned direct proportion.

Question 21 (d)

(d) Blake says that the population of the village will be greater than 4800 in 2022.

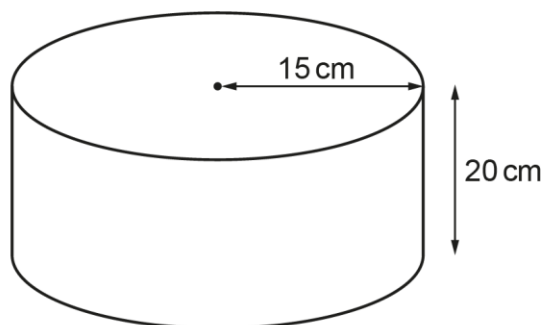
Write down an assumption Blake has made.

.....
..... [1]

Part (c) was far better answered than part (b). Most candidates were able to make some comment referring to the population continuing to increase. Good answers referred to continuing the increasing pattern of the graph or following the same increasing trend. Some candidates that attempted to use values in their statement made errors, as their values were incorrect or were not true for all parts of the graph stated, e.g., 'every year the population goes up at least 100'.

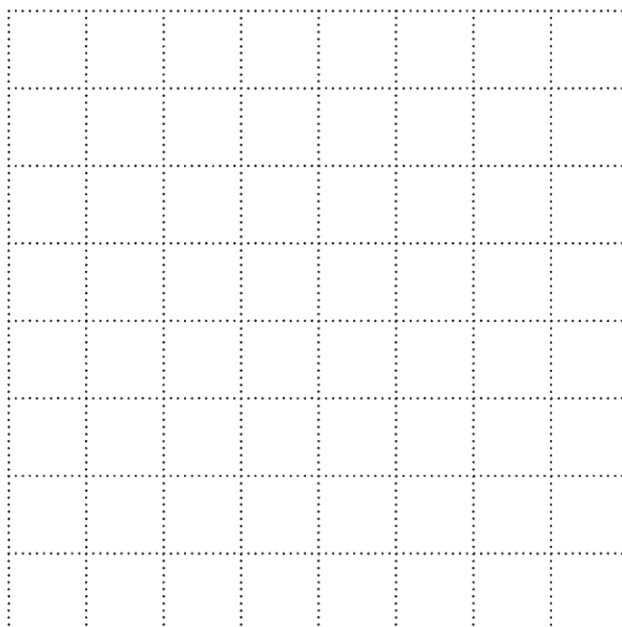
Question 22 (a)

22 The diagram shows a cylinder with radius 15 cm and height 20 cm.



Not to scale

- (a) On the grid below, draw the plan view of the cylinder.
Use the scale 1 cm represents 5 cm.



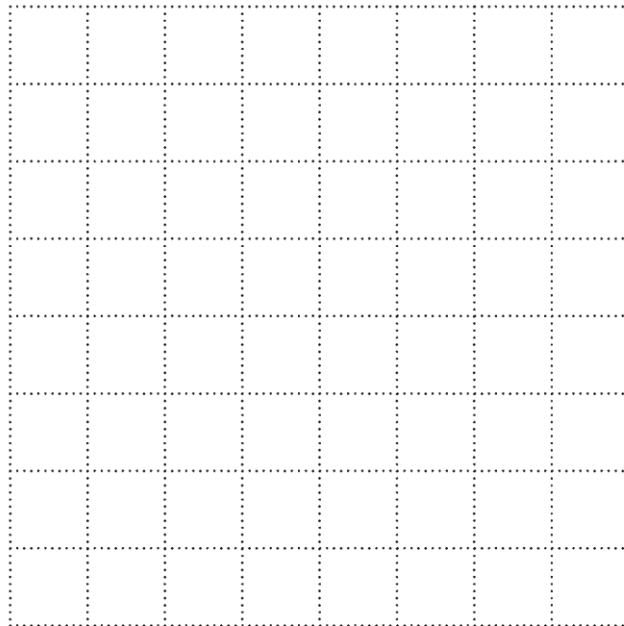
[2]

Many candidates did not recognise the need to use a compass to construct the circle as the question did not explicitly instruct its use. The scale was evident in most diagrams, and some labelled the radius 3 cm. Many diagrams were often the same 3-dimensional drawing that was given in the question.

The drawing of free hand circles was accepted but not with large differences between the horizontal and vertical diameters which was often the case.

Question 22 (b)

- (b) On the grid below, draw the front elevation of the cylinder.
Use the scale 1 cm represents 5 cm.



[2]

Candidates did not show an understanding of scale and rulers were often not used. Some candidates gained partial credit for drawing a rectangle of any size. Many candidates found the concept of a front elevation difficult with many implying a curved rectangle as their answer.

Question 23

- 23 A student says that they have placed the following values in order starting with the smallest.

$\left(\frac{1}{10}\right)^2$ $\sqrt{0.25}$ 4^{-1}

Has the student done this correctly?
Show how you decide.

..... because

..... [4]

Candidates struggled to convert the given values to a common form to compare their size. $\sqrt{0.25} = 0.5$ was seen the most often for M1. The most common conversion errors were $\left(\frac{1}{10}\right)^2 = \frac{1}{20}$ and $4^{-1} = 3$.

Question 24

24 Alex has a bag containing 3 blue beads and 5 green beads.
There are no other beads in the bag.

Alex takes a bead at random from the bag, puts it back, and then takes another bead.

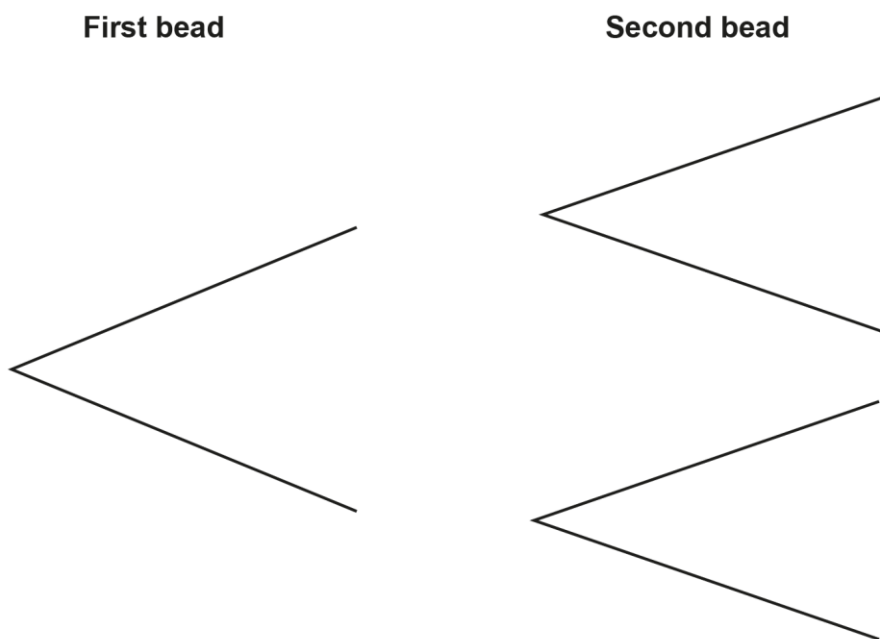
Alex says

The probability that the two beads are the same colour is less than 50%.

Is Alex correct?

Show how you decide.

You may use this tree diagram if you wish.



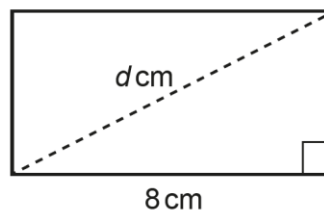
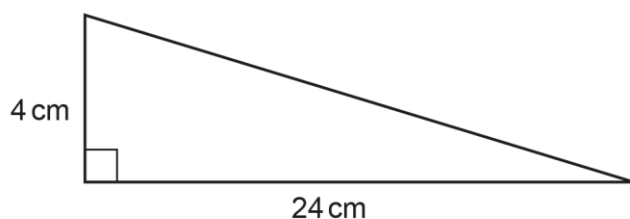
..... because

..... [5]

The inclusion of the tree diagram in this question allowed more candidates to access partial marks. Candidates commonly gave both correct fractions, $\frac{3}{8}$ and $\frac{5}{8}$, to score B2. Candidates rarely progressed beyond this initial start and few showed any understanding of how to use the probabilities to answer the question given.

Question 25

25 The diagram shows a right-angled triangle and a rectangle.



Not to scale

The triangle and rectangle have the same area.

Calculate the length, d cm, of the diagonal of the rectangle.
You must show your working.

$d = \dots\dots\dots$ cm [6]

Many candidates were able to find the area of the triangle or rectangle. Many candidates did not use the formula for finding the area of a triangle as provided on the formulae sheet, multiplying base by height only. Some candidates proceeded to correctly use their triangle area to find the width of the rectangle. This was often seen in a product calculation, e.g., $8 \times 6 = 48$.

Very few candidates were able to correctly use Pythagoras' theorem to find the diagonal length of the rectangle, often because they did not have the correct rectangle width. Some candidates initially used Pythagoras' theorem to find the length of the hypotenuse of the original triangle instead of finding its area.

Exemplar 4

Calculate the length, d cm, of the diagonal of the rectangle.
You must show your working.

$$x \neq 8 \neq 90^\circ =$$

$$\frac{124 \times 4}{96}$$

Triangle

$$\frac{1}{2} \times 24 \times 4 = 48$$

$$42 \text{ cm}$$

$$90 - 48 = 52$$

$$2 \sqrt{96}$$

$$\begin{array}{r} 2 \\ 4 \\ 6 \\ 8 \\ 10 \end{array}$$

$$\begin{array}{r} 90 \\ 48 \\ \hline 52 \end{array}$$

$$\frac{1}{2} \times 8 + 90$$

$$4 \times 90 = 360^\circ$$

$$8 \sqrt{360}$$

$$320$$

$$\begin{array}{r} 90 \\ 45 \\ \hline 45 \end{array}$$

$$d = \dots \text{10 cm} \dots \text{cm} \text{ [6]}$$

In this exemplar the candidate has correctly stated the answer of 10 cm, but they have not provided full step-by-step workings of how they have worked this out, as requested by the instruction 'You must show your working.'. The candidate has correctly worked out the area of the triangle as 48 to score M1 but no further workings lead to the answer of 10. This candidate was given 3 special case marks for providing the answer of 10 with insufficient working.

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