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OCR
Oxford Cambridge and RSA

GCSE (9–1)

Examiners' report

MATHEMATICS

J560

For first teaching in 2015

J560/03 November 2024 series

Version 1

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Contents

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, highlight good performance and where performance could be improved. A selection of candidate responses are also provided. The reports will also explain aspects that 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.

Paper 3 series overview

The cohort of candidates this series was larger than the cohort in November 2023.

Many candidates appeared equipped with strategies and knowledge to attempt the questions in the early part of the paper, but not the more challenging questions later in the paper. There were exceptions to this however and candidates performed well on questions such as 16 (a), 21 (a) and 21 (b).

Many candidates appeared confident to list factors, interpret Venn diagrams, use function machines, use basic ratio, use indices, complete tree diagrams and follow sequences.

It would aid candidates if they were more familiar in efficient standard methods. Some spent too much time on inefficient methods like listing and trial and improvement, or used non-calculator methods to find percentages.

Some candidates appeared to not have or not be able to use a calculator or a ruler and compasses.

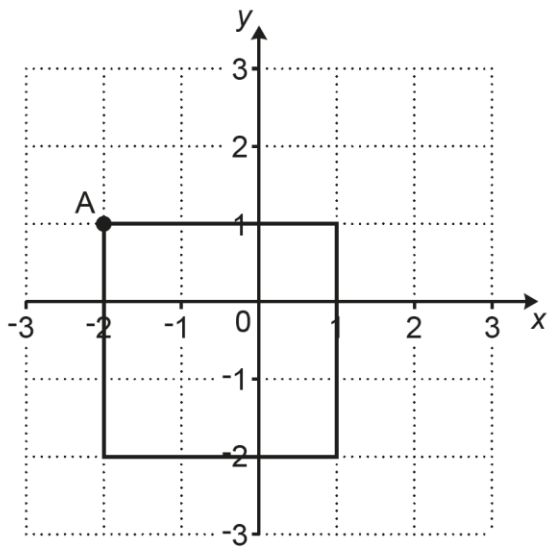
Many candidates found it a challenge to distinguish between perimeter and area, find HCF, use significant figures, use basic algebraic processes, use proportion and find combined probabilities from a tree diagram.

Candidates would benefit from looking at methods and arguments in detail, then practice both writing and presenting reasons for possible flaws or errors.

Candidates who did well on this paper generally:	Candidates who did less well on this paper generally:
• showed clear working leading to an answer and deleted any abandoned working • interpreted questions well and followed instructions • deleted any changed figures or evidence and rewrote them (rather than overwriting them) • used fundamental mathematical skills accurately, especially fractions, percentages and ratio • used standard methods correctly and did not revert to trial and improvement • made good use of a calculator, while still clearly writing the steps in the method • when answering 'Show that...' questions, structured their evidence with each step clearly seen • knew the difference between simple interest and compound interest • understood surface area • used a ruler, compasses and a sharp pencil.	• used the whole working space, often in a random manner and did not delete unused working • misinterpreted questions or did not follow instructions carefully • tried to over-write figures • made slips in calculations and were insecure with standard methods • resorted to trial and improvement rather than a standard method that would lead efficiently to the answer (and appeared unfamiliar with some standard methods) • appeared not to have the use of a calculator, suggested by the layout of working • missed steps in working • inappropriately used the compound interest formula from the formulae sheet to solve a simple interest problem • confused surface area with volume (or perimeter) and were unable to correctly recall the formula to calculate the area of a triangle.

Question 1 (a)

1 The diagram shows a square drawn on a one-centimetre square grid.



(a) Write down the coordinates of point A.

(a) (..... , ...) **[1]**

This was almost always correct. A few candidates reversed the coordinates.

Question 1 (b)

(b) Find the perimeter of the square.

(b) ..... cm **[1]**

Around half the candidates scored this mark. 9 was a common error.

Misconception

Many candidates confused perimeter with area.

Question 2 (a)

2 **(a)** Write down all the factors of 15.

(a) ..... **[2]**

This was answered quite well. The common errors were omitting one factor (often 1 or 15) or including another number.

Some candidates listed multiples of 15.

Question 2 (b)

(b) Find the largest number that will divide exactly into 15 and 60.

(b) ..... **[1]**

Candidates thought this more complex than it was and few scored the mark. Common wrong answers were 5, 60 and multiples of 15.

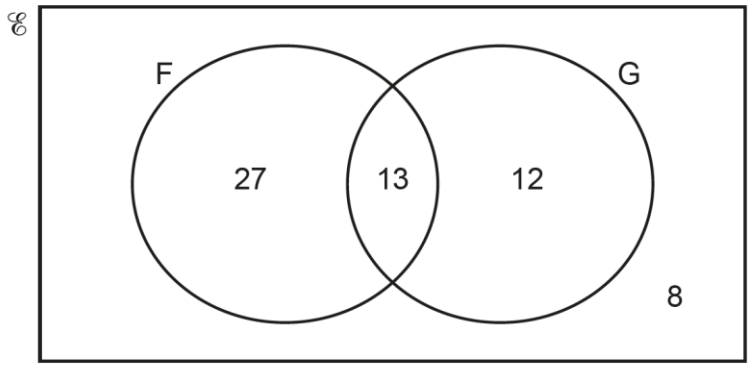
Misconception

Many candidates did not appreciate that 15 was a factor of 15 and 60.

Question 3 (a)

3 60 people are asked if they have visited France (F) and if they have visited Greece (G).

The Venn diagram shows the results.



(a) How many of the 60 people have **not** visited either France or Greece?

(a) ..... **[1]**

This was answered well and most candidates scored the mark.

Question 3 (b)

(b) How many of the 60 people have visited Greece?

(b) ..... **[1]**

This part was less successfully answered than part (a). The common error was 12.

Misconception

Many candidates did not appreciate that the 13 people in the intersection had also visited Greece.

Question 4

4 Ben thinks of a number.

Ben says,

When I square root my number and divide the result by 10 the answer is 1.3.

Find Ben's number.

..... **[2]**

Many good answers were seen, with more successful candidates going straight to 169.

Most of those who struggled resorted to trial and improvement, usually unsuccessfully. A few worked through to 169, but then gave the answer 13.

170 was a common wrong answer. A common wrong method was to square root 13.

Question 5

5 These are the ingredients for making some scones.

Flour	360 g
Butter	90 g
Sugar	45 g
Milk	180 ml

10 ml of milk weighs 10.4 g.

Work out the **total** weight of all the ingredients.

..... g **[3]**

This question was less answered well than expected, although a significant number of good answers were presented. The best candidates answered it efficiently.

Less successful candidates multiplied 180 by 10.4 rather than 1.04. Candidates who were not successful generally knew they had to do something with 180 and 10.4, but were unsure which operation to use.

Some multiplied each of the quantities by 10.4 before adding and some added 360, 90, 45 and 10.4.

Question 6 (a)

6 **(a)** By rounding each value to **one** significant figure, estimate the cost of 4.9 kg of carrots at 73p per kg.

(a) £ ..... **[2]**

Many candidates struggled with this question.

Common errors were to multiply the given numbers and then round the answer, to round 4.9 to 5 and then multiply it by 73, or to work out 5 × 70 and give the answer £350 (this scored the method mark only).

Question 6 (b)

(b) A student works out an estimate for this calculation.

$$\frac{13.7 + 1.28}{5.099}$$

Their method is to:
- round each number correct to the same number of significant figures and
- work out the approximation.

The student writes

$$\frac{14 + 1}{5} = \frac{15}{5} = 3.$$

What error has the student made in using their method?

.....

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

A few correct answers were seen to this question. Candidates generally did not pick out the key words 'same number of significant figures' from the question.

Common incorrect responses were 'He rounded wrong', 'The 5.099 should have been rounded to 6', 'He made it a top-heavy fraction' and 'He didn't use significant figures correctly'.

Misconception

Many appeared to be trying to find an error in the rounding rather than in the method and may not have read the question carefully.

Question 7 (a)

7 **(a)** Rearrange this formula to make x the subject.

$y = x + 3$

(a) ..... **[1]**

This was reasonably answered by more successful candidates.

Less successful candidates were unsure of algebraic processes.

Common errors were $y + 3$, $3y$, $3 - y$ and $y \div 3$.

Question 7 (b)

(b) Rearrange this formula to make w the subject.

$p = 3w$

(b) ..... **[1]**

Responses here were slightly less successful than part (a) and similar errors in algebraic processes were made.

Common errors were $w = \frac{3}{p}$, $w = 3p$ and $w = 3 + p$.

Question 8

8 For each statement, tick (✓) whether the value of x is true or false.
The first one is done for you.

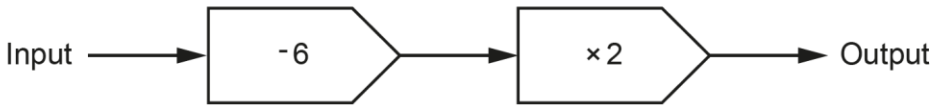
Statement	Value of x	True	False
$x > -1$	5	✓	
$x \leqslant -1$	-1		
$\frac{x}{10} = 0.7$	70		
$x - 2 \neq 5$	3		
$-1 < x < 0.7$	0		

[3]

Many candidates gained at least one mark on this question. There was no obvious pattern to where incorrect responses occurred, but it was unusual to find all the statements answered incorrectly.

Question 9 (a) (i)

9 This is a function machine.



(a) (i) Find the output when the input is 9.

(a)(i) ..... **[1]**

This was answered well.

Common errors were $9 - 6 \times 2 = -3$ or -6.

Question 9 (a) (ii)

(ii) Find the input when the output is 36.

(ii) ..... **[2]**

This part was also generally answered well. A few candidates gained a method mark for showing 18 or 36 ÷ 2, however the working seen often suggested that less successful candidates did not understand the inverse process.

A common error was 12.

Question 9 (b)

(b) Complete this function machine to show the equation $y = 8 + 3x$.

[2]

Many candidates were unsuccessful here. Most just wrote the terms and operations in the boxes in the order given, so *y* was the input, 8 or +8 was in the first box and so on.

A few candidates gained B1 for placing *x* and *y* in the correct places.

Question 10

10 100 students vote in a school election.

1 vote is spoiled and is not counted.
The remaining votes are for Jamal or Layla and are in the ratio 3 : 8.

How many **more** votes does Layla have than Jamal?

..... **[3]**

This was answered quite well. Many used a diagrammatic approach successfully. Those candidates who began by completing 99 ÷11 were usually successful, though some candidates carried out 99 ÷11 and stopped there.

Candidates who were not successful often calculated 3 + 8 = 11, but then multiplied 3 and 8 by 11. Others divided 100 (or 99) by 3 or 8.

Question 11 (a)

11 In a particular town last year:

- it rained on 17 of the 30 days in November
- it rained on 18 of the 31 days in December.

(a) Which month, November or December, had the highest proportion of rainy days? Show how you decide.

..... because .....

..... **[3]**

Quite a few candidates scored marks here. Often $\frac{17}{30}$ and $\frac{18}{31}$ were seen and some of these were converted to decimals or percentages. Many however calculated 30 – 17 = 13 and 31 – 18 = 13, then concluded that neither month had the highest proportion of rain.

Question 11 (b)

(b) Sam says,

I think the probability it will rain on December 25th next year is $\frac{18}{31}$.

What assumption has Sam made?

.....

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

Most candidates attempted this question, but many seemed unsure how to answer it clearly. Many commented that there would be the same amount of rain without mentioning the number of rainy days. Almost no-one gave the response that relative frequency can be used to form a probability.

Question 12 (a)

12 The table shows some numbers each written as a power of 4.

Number	**... as a power of 4**		**... as a power of 2**	
4	4	4^1	2×2	2^2
16	4×4	4^2		
64	$4 \times 4 \times 4$	4^3		

(a) Complete the table to show 16 and 64 each written as a power of 2. **[2]**

Candidates answered this well. Less successful responses were 16, 16 × 4, or other answers involving 8 and/or 32.

Question 12 (b)

(b) A number is written as 4^{20}.

Use a pattern in the table to help you write this number as a power of 2.

(b) ..... **[1]**

Only a small proportion of candidates could translate the patterns of part (a) into an answer here. A few candidates wrote long products such as 2 × 2 × 2 × 2 × 2... and a few reached the correct answer. A number of solutions included 2^{10} and some very long numbers.

A significant number of candidates did not attempt a solution.

Question 13 (a)

13 (a) Write 0.001 025 in standard form.

(a) ..... **[1]**

Most candidates attempted to answer this question and a reasonable number gained the mark.

There was no discernible pattern to the incorrect answers, although 1.025×10^{3}, 1025×10^{-6}, 1.025×10^{-6} and $\frac{41}{40000}$ were seen.

Question 13 (b)

(b) A weather blogger writes:

- 1.655×10^{12} raindrops fall in a storm
- the mass of each raindrop is 6×10^{-5} grams.

Calculate the total mass of all of the raindrops that fall in the storm.
Give your answer in standard form in kilograms.

(b) ..... kilograms **[4]**

This was often omitted and was not answered well by those who attempted it. Only a few candidates scored marks here. Those who responded often realised they had to multiply the mass of a raindrop by the number of raindrops, with some reaching an answer with the digits 993.

A lot of candidates attempted to convert the standard form numbers into ordinary numbers and combine them, but then seemed unsure how to proceed (likely due to the size of the figures they arrived at). The responses seen suggested that most candidates did not know how to use their calculator to work with the standard form numbers.

Few candidates realised that a conversion from grams to kilograms was necessary, but those that did sometimes multiplied by 1000.

Key point

Candidates will benefit from being able to use their calculators efficiently, including with standard form.

Question 14 (a)

14 (a) Machine A makes enough lollipops to fill 300 packs.

There are 8 lollipops in each pack.

Show that 2400 lollipops are made by machine A. **[1]**

Many correct calculations of 300 × 8 were seen. Several candidates worked backwards from 2400 and so did not score the mark.

Question 14 (b)

(b) Machine B makes 3600 lollipops in the same time it took by machine A to make 2400 lollipops.

Machine B makes lollipops one at a time and at a constant rate.

What fraction of the time needed to fill 300 packs is saved if machine B is used rather than machine A?
Give your answer in its simplest form.

(b) ..... **[3]**

This question was a challenge for many candidates.

More successful candidates took the efficient route that 3600 would be made in the time that 2400 were made. Therefore $\frac{2}{3}$ of the time would be needed and saving $\frac{1}{3}$ of the time.

Many candidates worked with 300 or 6000; fractions formed from combinations of these were seen, but often not leading to an answer. Quite a few candidates gained a mark for 12 000 or $\frac{2}{3}$, but the method often stopped at this point.

Question 15 (a)

15 Shop A and shop B have special offers on the same cupcakes.

Shop A	Shop B
	
£1.25 each or get 4 for the price of 3	£1.40 each or get 3 for the price of 2

(a) Show that the special offer cost of 6 cupcakes from Shop A is £6.25. **[1]**

Candidates answered this question well and several methods were used successfully.

The few candidates who didn't gain the mark missed showing a critical step, e.g. missing out 1.25 × 2 and just assuming it was clear that two cupcakes cost £2.50.

Exemplar 1

(a) Show that the special offer cost of 6 cupcakes from Shop A is £6.25. **[1]**

4: £5 − 1·25 = £3·75

3·75 + 1·25 + 1·25 = £6·25 ⇒ 6 cupcakes.

It is important when answering 'Show that...' questions that all necessary steps are shown.

Question 15 (b)

(b) Gabi wants 25 cupcakes for a party.

Which shop will be cheapest and by how much?
Show how you decide.

(b) Shop ..... by .....p **[5]**

This was answered well by the majority of candidates who tackled it.

Not many candidates got the solution completely correct, but many picked up B2 for one correct total price or M1 for identifying the numbers of special offer batches needed from each shop.

A common error was to ignore the special offers and work out the cost of 25 cupcakes at £1.25 and £1.40. Some candidates did attempt to compensate for the special offers after this start, but the method rarely produced the correct result.

Many lists of costs were seen rather than more efficient calculator methods.

Candidates who gave two incorrect prices sometimes lost the SC mark because they did not convert their difference in pounds to pence or did not give their answer with a '£' sign (for example, calculating a difference of £3.30 and then responding 'Shop B by 3.30p').

Question 16 (a)

16 Sasha has these two sets of number cards.

Set A: 1 2 3 4 Set B: 8 9 10

One card is taken at random from each set.
Sasha adds the numbers on the two cards to get a total.

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

		Set A			
	Total	1	2	3	4
Set B	8		10	11	12
	9		11		13
	10	11	12		

[2]

This was the first of the questions common with the Higher tier and it was answered well by many candidates.

Only a small number of candidates did not attempt an answer.

A few candidates made numerical errors and a very few gave products of the numbers.

Question 16 (b)

(b) Find the probability that the total is a prime number.
Give your answer as a fraction.

(b) ..... **[2]**

This was answered less well, but many candidates did score marks.

A common error was to include the top row of the table with the results, giving a denominator of 16. Another error was to miscount the number of primes in the table.

Many candidates scored a mark for writing a correct denominator in their probability, or, less often, numerator.

Question 17

17 The price of a holiday increases from £320 to £340.

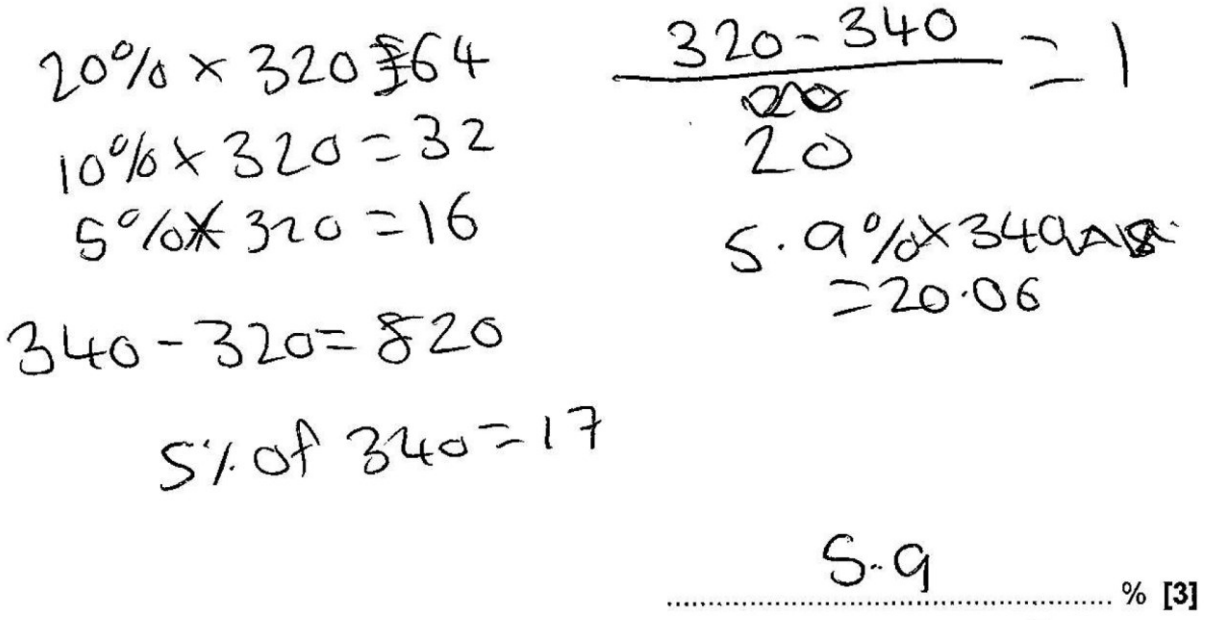
Work out the percentage increase in the price of the holiday.

..... % **[3]**

Many candidates attempted this question, but only a small number were successful. The most successful used standard procedures to find the percentage change. Too many attempted non-calculator methods, for example working out 1% of 320 and using this to try to reach £20. As well as being inefficient, these methods often did not result in the correct answer.

Many candidates scored M1 for finding a difference of £20.

Exemplar 2



This candidate used an inefficient method, but correctly found 20% of 320, then 10% and 5%. They were however unable to use this to achieve a result and it is abandoned.

After restarting, the final answer was achieved by using a percentage calculation of £340 and not £320 (M0).

The M1 for finding a difference of 20 was allowed to stand as it appeared to be used (as their target) towards the answer.

The unused working was not deleted as it should have been.

Question 18

18 Darcie invests £x at a rate of 1.5% per year simple interest for 5 years.
Ivan also invests £x but at a rate of 1.1% per year simple interest for 6 years.

Darcie earns £108 more interest than Ivan.

Work out the value of x.
You must show your working.

$x =$ ..... **[6]**

This question was attempted by many candidates, but fewer than hoped as there was a question in a similar context in summer 2024.

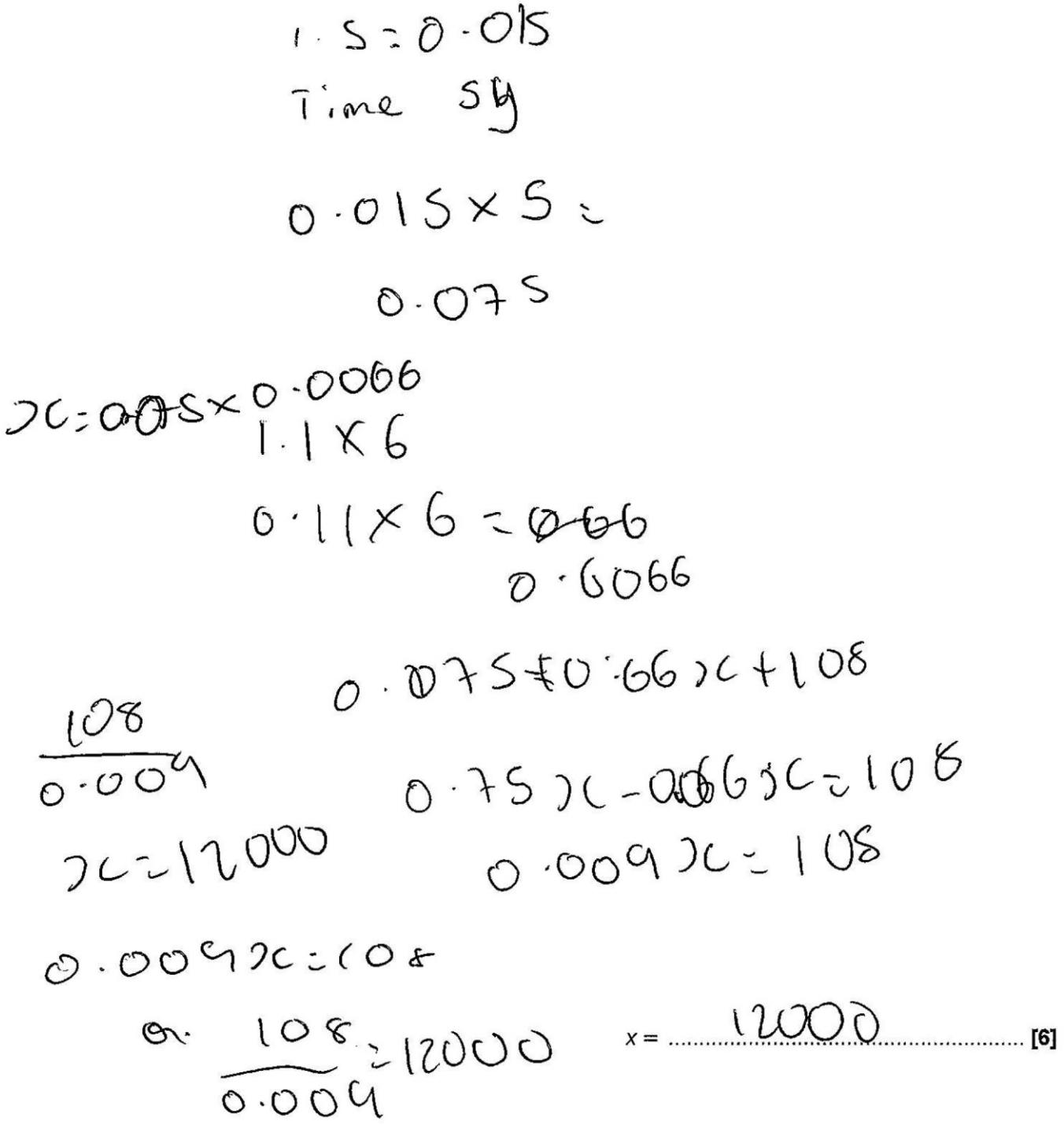
Of those who did attempt the question, few scored above 2 marks.

A very small number of candidates attempted the main method of creating expressions and then an equation using x and 108.

A common start (which probably led into the candidates attempting the question numerically rather than algebraically) was to recognise that Darcie received 7.5% over the time of the investment and Ivan 6.6%; each of these earned M1. After that, methods often became poorly organised calculations, possibly involving 108, or attempting trials of 7.5% of an amount and, sometimes, 6.6% of the same amount. Too often the calculations were incorrect percentage calculations, e.g. 7.5% of £200 = 200 × 7.5.

The trial and improvement scheme did not provide additional credit for multiple attempts at different amounts.

Exemplar 3



This candidate represents one of the few to construct a complete solution.

After a faltering start with several errors, they finally achieve a correct statement midway down the response. Initial statements have varying numbers of zeros after the decimal point; after seeing the correct 0.075 (of x) it becomes the incorrect 0.75 and there is similar uncertainty for 0.066, but this is condoned as transcription errors as the difference is then given correctly as $0.009x$.

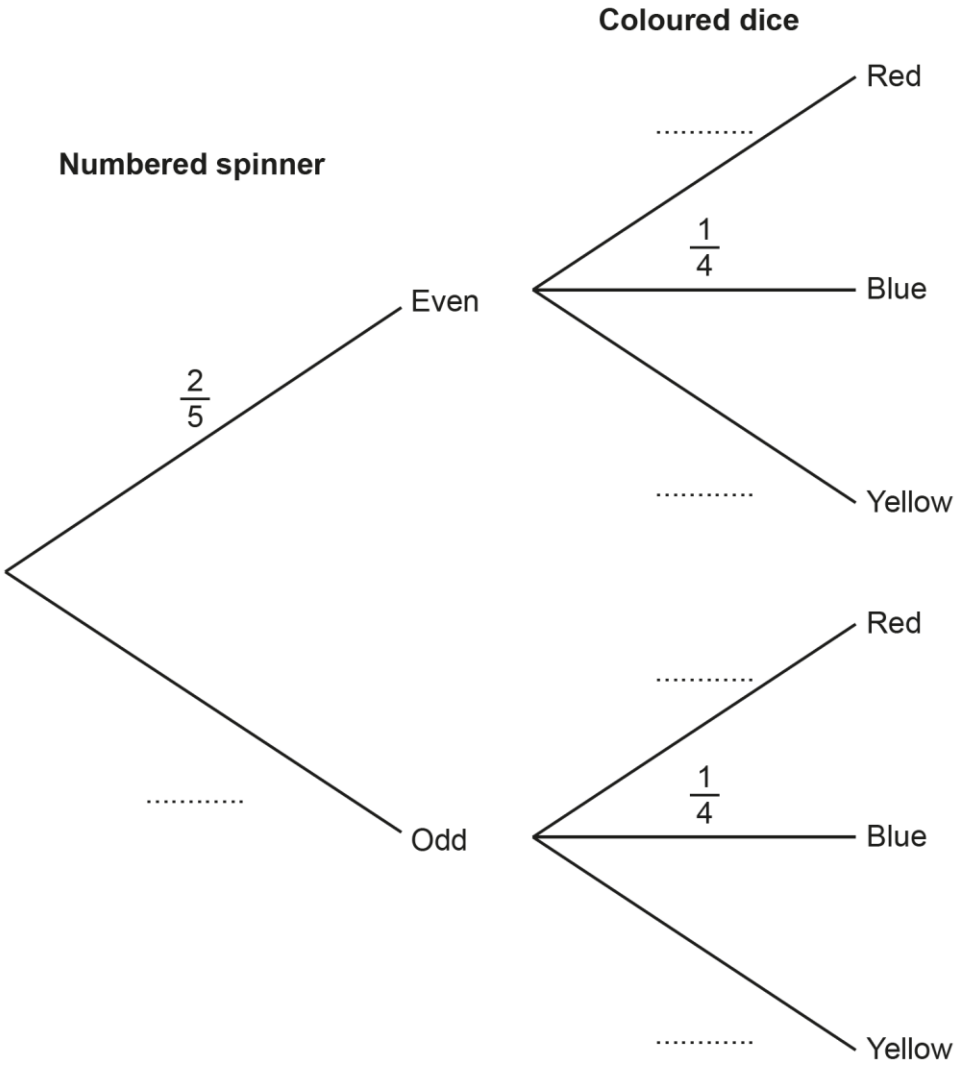
The rest of the method is correct, even though the order is uncertain, as presumably $0.009x = 108$ comes before $\frac{108}{0.009}$, which is then repeated at bottom left.

Question 19 (a)

19 Kai spins a fair five-sided spinner.
The sectors of the spinner are numbered 1, 2, 3, 4 and 5.

Kai also throws a fair four-sided dice.
Two of the dice faces are red, one is blue, and one is yellow.

(a) Complete this tree diagram.



[3]

Most candidates attempted this question and many scored marks. $\frac{3}{5}$ was usually correctly placed on the first branch to score B1, but some used $\frac{1}{4}$.

Many candidates placed $\frac{1}{4}$ correctly on one or both of the second branches (both had to be correct for the B1 to be awarded). Occasionally, fractions involving fifths appeared on the second branches. Some candidates put one pair of probabilities on one set of second branches and different probabilities on the other set. Less successful candidates sometimes used whole numbers. Fortunately, very few candidates used percentages or decimals.

Question 19 (b)

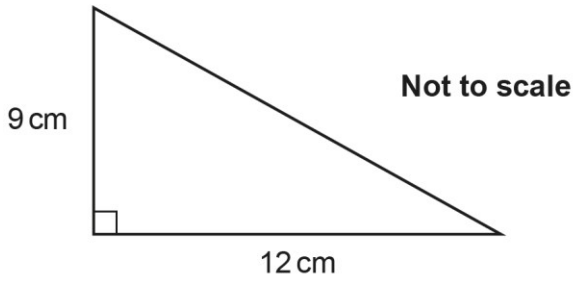
(b) Calculate the probability that Kai gets an even number on the spinner and a blue face on the dice.

(b) ..... **[2]**

This was not well done and only a few candidates scored marks. The common error was $\frac{2}{5} + \frac{1}{4}$, though a few subtracted the fractions instead.

Question 20 (a)

20 (a) The diagram shows the cross-section of a triangular prism.



Work out the area of the cross-section.

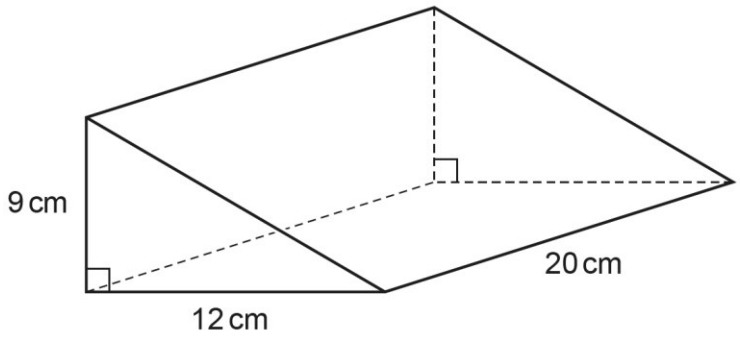
(a) ..... cm^2 **[2]**

A significant proportion of candidates calculated just 9 × 12 and 108 was the most common answer.

A small number of candidates worked out the length of the hypotenuse instead (often correctly), but this scored 0 marks.

Question 20 (b)

(b) This diagram shows the triangular prism.



Not to scale

Work out the total surface area of the triangular prism.
You must show your working.

(b) ..... cm^2 **[5]**

Most candidates attempted this question, but very few scored more than one mark. Many responses suggested that candidates did not understand what was meant by 'surface area'.

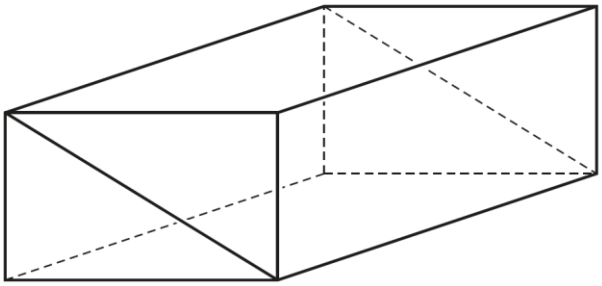
Common wrong methods were 9 × 12 × 20 and 9 + 9 + 12 + 12 + 20 + 20 (+ 20).

A few candidates gained M1 for calculating the area of one face area correctly, usually 9 × 20 or 12 × 20. Some found two different areas correctly to score M2.

Very few identified that Pythagoras' theorem was necessary (even those who had used it in the previous part).

Question 20 (c)

(c) Two of these triangular prisms are joined to make a new prism.



Give a reason why the total surface area of this prism is **not** two times your answer in **part (b)**.

.....

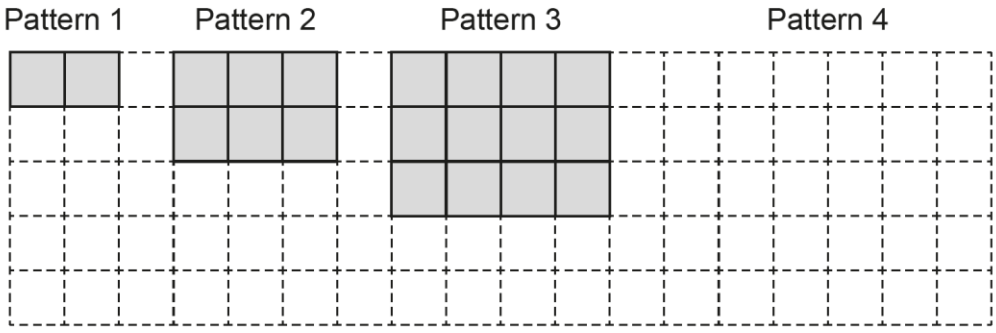
..... **[1]**

Almost no correct answers were seen from the candidates who attempted this question.

Responses were generally poorly expressed. Statements such as 'Because it is now a rectangle', 'It will be different lengths' and 'It's a different shape' suggested that few candidates understood what was being requested.

Question 21 (a)

21 Here are the first three tile patterns of a sequence.



(a) Draw Pattern 4 in the space above. **[1]**

This was usually correct. The occasional errors were to rotate the shape or to draw a square (generally 5 × 5, but occasionally 4 × 4).

Question 21 (b)

(b) Complete this table.

Pattern	Calculation	Number of tiles
1	1×2	2
2	2×3	6
3	3×4	12
4		
5		
10		
n		$n^2 + n$

[4]

Almost all candidates attempted this question and many scored at least a mark. The row for Pattern 4 was usually correct and the row for Pattern 5 was also often correct, with only a few numerical errors.

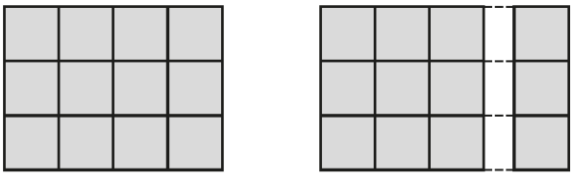
The common error with the row for Pattern 10 was to write 6 × 7 and 42, not realising that it didn't follow directly on from the rows above.

Candidates were less successful in the final row, which was intended to lead them into the final part of the question. Expressions such as $n + n + n$ or $n \times n$ ($\times n$) were common.

Question 21 (c)

(c) Each pattern in the sequence can be split into a square of tiles and a single column of tiles.

For example, Pattern 3:



The square in Pattern *n* contains 4096 tiles.

Work out how many tiles are in Pattern *n*.

(c) ..... **[3]**

With many errors in the final row of the table in part (b), this part was only attempted by just over half of the candidates and only a very small proportion of the attempts were correct.

Common errors were to answer 4096 or work out 4096^2 or $4096 \div 4$. Very few attempted $\sqrt{4096}$. Several less successful responses answered 9 + 3 = 12.

Question 22

22 A bag contains only blue, green and red counters in the ratio 7 : 3 : 2.
There are 76 more blue counters than green counters in the bag.

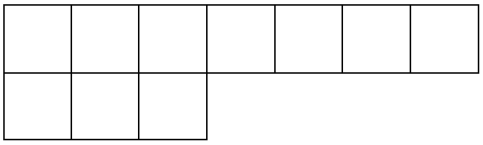
Work out the **total** number of counters in the bag.

..... **[4]**

This common question was attempted by most of the candidates and some of these scored a mark.

Many candidates worked out 7 + 3 + 2 = 12, but then were unsure what to do.

A number of candidates used a diagrammatic method such as:



but were then unsure what to write in the boxes. It was a pleasure however to see some realise that the key to the solution was the four box difference between the two lengths of boxes in this method and work out 76 ÷ 4 = 19 followed by 19 × 12.

Many attempted trial and improvement or a 'build up' method of equivalent ratios, but these were rarely successful. They often did not go far enough and usually did not show the difference that went with each ratio.

A number of candidates started incorrectly with calculations such as 76 ÷ 12, 76 ÷ 7 or 76 × 12.

Question 23 (a)

23 A farmer has 60 pear trees.
The table shows the heights, h metres, of the pear trees.

Height (h metres)	Frequency		
$1 < h \leqslant 2$	5		
$2 < h \leqslant 3$	8		
$3 < h \leqslant 4$	32		
$4 < h \leqslant 5$	15		

(a) Calculate an estimate of the mean height of the 60 pear trees.

(a) ..... m **[4]**

Many candidates did not attempt this question and knowledge of the topic seemed lacking. Where there was an attempt, the mid-points were sometimes seen, but rarely the sum of the frequencies × mid-points.

A common error was to divide by the number of groups (4) rather than the total frequency (60), whether this was adding the frequencies and dividing by 4, adding the end points of the groups and dividing by 4, or adding their 'frequencies × mid-points' and dividing by 4.

Question 23 (b)

(b) Explain why it is not possible to use the information from this table to calculate the **exact** value of the mean height.

.....

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

Only some candidates attempted this part.

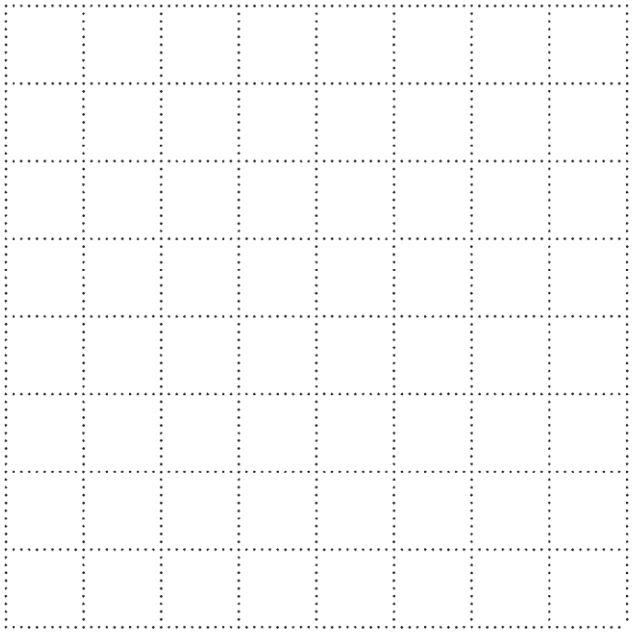
A few clear 'the exact tree heights are not known' statements were seen. Many other responses were ambiguous and/or poorly expressed, such as 'because it is an estimate' (which was understood to mean the average was an estimated mean and so did not answer the question) or 'Due to the metres $1 < h \leq 2$ and $2 < h \leq 3$ the way recorded into the table'.

Candidates should practise writing explanations of why there may be a flaw in a given method and reading these to their peers to receive *constructive* feedback.

Question 24 (a)

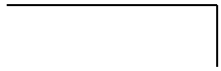
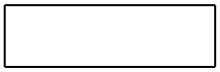
24 $\overrightarrow{AB} = \begin{pmatrix} 3 \\ -1 \end{pmatrix}$ and $\overrightarrow{BC} = \begin{pmatrix} 2 \\ 6 \end{pmatrix}$.

(a) On the grid below, draw $\overrightarrow{AB}$.



[2]

Only a very few candidates demonstrated good knowledge of vectors.

Of the answers seen, the most common were  or  .

These diagrams were sometimes rotated. Some candidates plotted points, having drawn axes on the grid.

A few correct vectors were drawn. Some included an arrow, though not always in the correct direction.

Question 24 (b)

(b) Work out $\overrightarrow{AC}$.

$\begin{pmatrix} \quad \\ \quad \end{pmatrix}$ **[2]**

Only a few correct answers were seen. A few candidates had one correct component.

Some answers contained a horizontal line between the numbers, as seen in fractions.

Question 24 (c)

(c) Write down $\overrightarrow{BA}$.

$\begin{pmatrix} \quad \\ \quad \end{pmatrix}$ **[1]**

A few correct answers were seen.

The most common error was $\begin{pmatrix} -1 \\ 3 \end{pmatrix}$, along with $\begin{pmatrix} 1 \\ 2 \end{pmatrix}$ also. Other incorrect vectors were given without any discernible method of how they'd been reached.

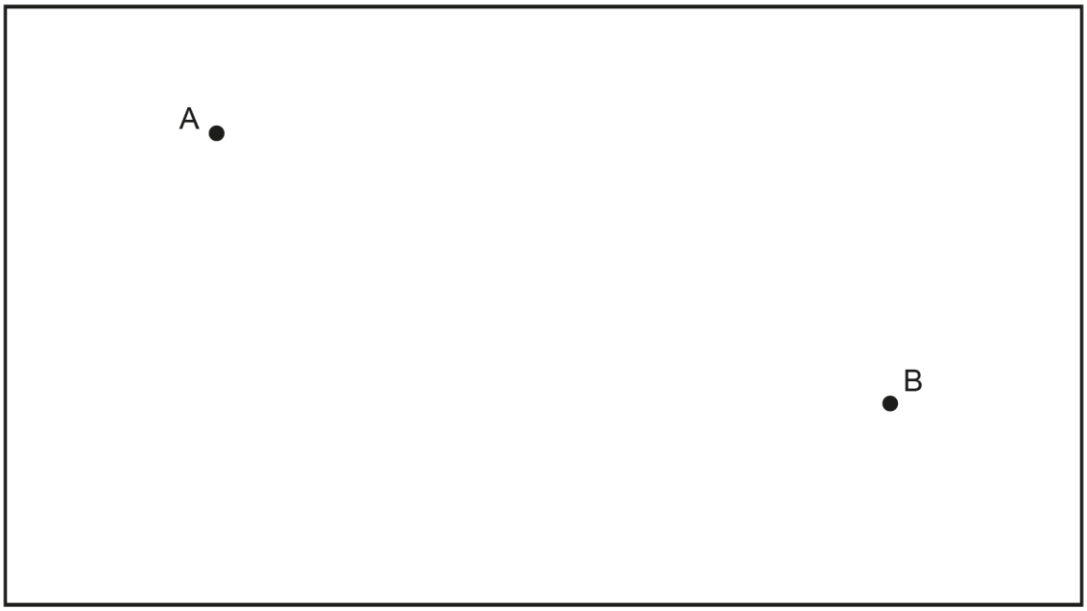
As in (b), some answers contained a horizontal line, e.g. $\begin{pmatrix} \frac{1}{2} \end{pmatrix}$.

Question 25

25 The diagram represents a rectangular field.
A and B are two trees.

A straight path goes across the field.
The path is always the same distance from A and B.

Construct the route followed by the path.
Show all your construction lines.



[2]

Many candidates seemed unfamiliar with this type of construction and very few candidates provided a response consistent with a perpendicular bisector of AB.

A small number of candidates drew correct arcs and a few joined their intersections using a ruler. Some of the correct constructions did not reach the sides of the rectangle and so only scored only 1 mark.

Most candidates just joined A to B. Some drew a picture of a path.

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