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OCR
Oxford Cambridge and RSA

GCSE (9–1)

Examiners' report

MATHEMATICS

J560

For first teaching in 2015

J560/03 November 2022 series

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 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.

Paper 3 series overview

Most candidates made attempts to answer questions throughout the paper. The vast majority of candidates seemed to have a calculator and also a ruler, though a small number drew freehand.

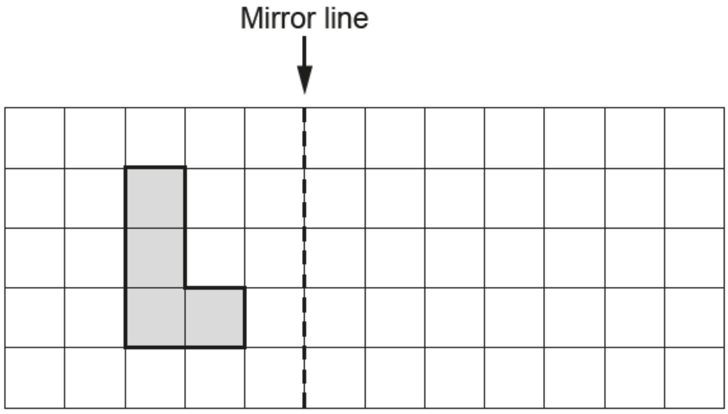
Candidates were most confident with questions in everyday contexts, such as money, and answered these questions well. They were least comfortable with abstract questions and ones in which they were required to show working.

Many candidates were unfamiliar with topics in the second half of the paper, although many sensible attempts were made on probability and scatter diagrams.

Candidates who did well on this paper generally did the following:	Candidates who did less well on this paper generally did the following:
• showed organised and thorough working when answering a question • demonstrated familiarity with algebraic processes • understood and used mathematical terms correctly • read questions carefully and answered the stated question • presented clear, step by step working, particularly in 'Show that…' questions and did not omit steps or a final answer in trials • deleted unused working • explained their reasoning coherently • showed understanding in a wide range of topics.	• provided incomplete working and insufficient supporting evidence for answers that required workings to be shown • made simple errors in calculations • used trial and improvement extensively rather than inverse processes and often did not show clear substitution into trials or the results of trials • presented many, sometimes random, calculations without choosing one clear final method • gave very brief or unreasoned explanations • showed understanding in a small range of topics.

Question 1

1 Reflect this shape in the mirror line.



[2]

Many correct answers were seen and, in this question, freehand was condoned. A small number of candidates translated the shape.

Question 2 (a)

2 **(a)** Write these numbers in order of size, starting with the smallest.

-20 10 0.351

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

Many candidates answered this question correctly but a sizeable minority transposed 0.351 and –20, thinking that 0.351 was the smallest number.

Question 2 (b)

(b) Find the difference between the largest and the smallest of these numbers.

34 304 3.04 300.4

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

Many candidates scored both marks but some were undecided about which number was the smallest.

A significant number gained a Special Case mark for finding a correct difference between two of the numbers. A reasonably common error was a difference of 100 between 304 and 3.04.

Question 3 (a)

3 (a) Insert brackets to make this calculation correct.

$$5 - 5 \times 5 = 0$$

[1]

Responses to this question were often correct. A common error was (5 × 5) and some gave (5 – 5 ×).

Question 3 (b)

(b) Insert **two** of these symbols $+$, $-$, $\times$ or $\div$ to make this calculation correct.

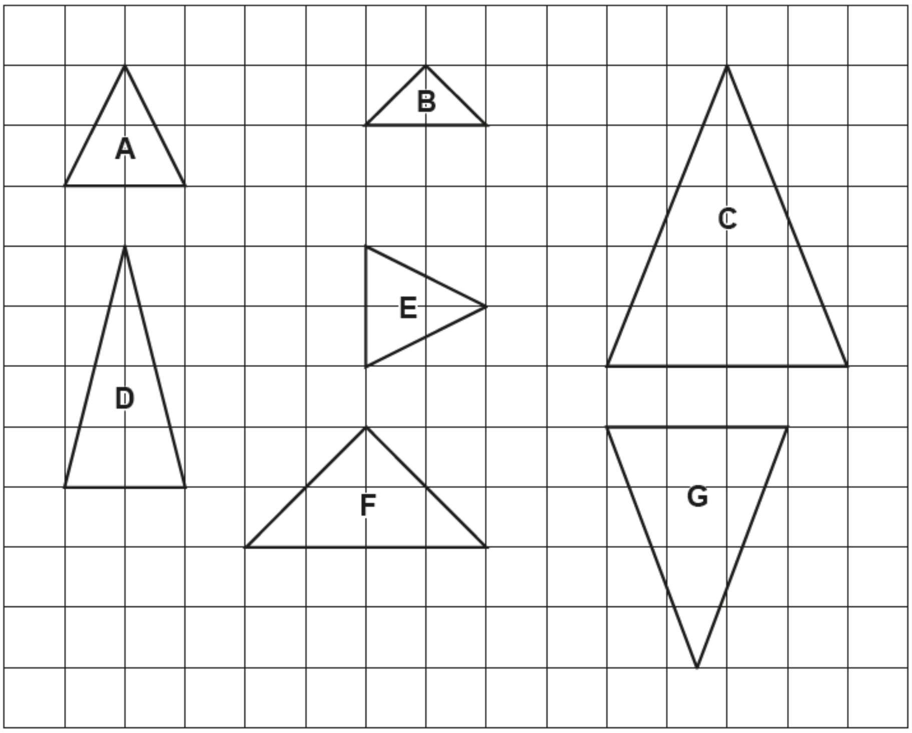
$$20 \ \dots.\ 5(1 \ \dots.\ 3) = 0$$

[1]

This question was not very well answered. The common incorrect answer was 20 ÷ 5(1 + 3) but signs appeared in many different combinations. Not many candidates showed working but a few did show lists of calculations with the symbols in different positions.

Question 4

4 On the grid are seven triangles, labelled **A** to **G**.



Complete each statement by writing the letter of the correct triangle.

Triangle **A** is congruent to triangle ....

Triangle **B** is mathematically similar to triangle .... **[2]**

E and F was the most common outcome. Other combinations were seen without any clear pattern.

Question 5 (a)

5 Solve.

(a) $\frac{x}{4} = 8$

(a) $x =$ .... **[1]**

Many correct results were seen and 32 was a common answer. The incorrect answer of 2 was also frequently seen.

Question 5 (b)

(b) $8 - x = {}^{-}2$

(b) $x =$ .... **[1]**

Many gave the correct answer of 10 but 6 appeared frequently too.

Question 6 (a)

6 **(a)** Write 28 : 70 as a ratio in its simplest form.

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

A large number of candidates scored 1 mark for some simplification of 28 : 70 in ratio form. A fairly common incorrect response was 7 : 10.

Question 6 (b)

(b) A map has a scale of 8 centimetres represents 1 metre.
The scale can be written as a ratio in the form 1 : *n*.

Find the value of *n*.

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

Many candidates did not score any of the marks here. Those who did know what to do often thought that there are 1000 cm in 1 m. Many candidates appeared unsure of map scales. It was uncommon to see 8 : 100 but 1 : 800 and 8 : 800 did appear. Even when a ratio was seen, candidates were unsure how to get the value of *n*.

Question 7

7 It takes a librarian $1\frac{1}{4}$ minutes to put a plastic cover on a book.

Work out how many books the librarian can cover in $\frac{1}{2}$ hour.

.... **[3]**

This question was not answered well. A significant number of candidates thought that $1\frac{1}{4}$ was a time in hours and wrote it as 1 hour 15 minutes, 1.15 minutes or 1 hour 25 minutes. Similar errors occurred where it was understood that the time was in minutes.

Many, but far from all, understood that it was necessary to change the $1\frac{1}{4}$ minutes and the $\frac{1}{2}$ hour to common units. Instead of just changing $\frac{1}{2}$ hour to minutes and dividing by $1\frac{1}{4}$ many attempted to change the $1\frac{1}{4}$ into something else. Quite a number said that $1\frac{1}{4}$ = 5 minutes (1 × 4 + 1). Similarly, not all gave 30 minutes as the conversion for $\frac{1}{2}$ hour.

Those who scored 3 marks often used 30 and 1.25 or 1800 and 75.

Generally, candidates did not understand how to deal with fractions and could not use the functions on their calculators that would have allowed them to work this answer out.

Question 8 (a)

8 **(a)** Complete this statement by writing a positive whole number in each box to make two different but equivalent fractions.

$$\frac{2}{\square} = \frac{\square}{8}$$

[2]

Many candidates gained full marks here. Few candidates showed any working in reaching their answer.

Question 8 (b)

(b) Complete this statement by writing a possible positive whole number in the box.

$$\frac{1}{5} < \frac{\square}{10} < \frac{1}{2}$$

[2]

Fewer than half the candidates gained a mark in this question. As in the previous part, very little working was seen but, where it did occur, this was often supporting the correct answer. More able candidates converted the two fractions to either decimals or fractions with denominators of 10 but this was rarely seen.

Question 9 (a)

9 A meal deal consists of a burger, a side dish and a drink chosen from these lists.

Burgers	**Side dish**	**Drink**
Hamburger (H)	Baked beans (B)	Cola (C)
Veggie burger (V)	Fries (F)	Lemonade (L)
	Sweetcorn (S)	

(a) Some of the possible meal deals are shown in this table.

Complete the table to show all the possible meal deals.
You may not need all the rows.

Burger	Side dish	Drink
H	B	C
H	B	L
H	F	C

[2]

Most candidates gave a correct list of 12 combinations. Those that scored both marks usually showed a clear system when writing the combinations to avoid missing, or repeating, combinations.

Question 9 (b)

(b) Write down the fraction of the meal deals that include baked beans (B).

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

Many candidates gained the mark for $\frac{1}{3}$ (or equivalent) or their follow through correct answer. A small number of candidates gave the number that included baked beans over 36 rather than 12.

Question 10 (a)

10 Two supermarkets, A and B, have special offers on the same packet of biscuits.

Supermarket A	Supermarket B
Normal price: £1.50 for each packet Special offer: Buy two packets at the normal price and get a third packet for half price	Normal price: £1.60 for each packet Special offer: 10% off the normal price

(a) Dan buys **one** packet of these biscuits.

Which supermarket is best value for Dan?
Show how you decide.

Supermarket .... because ....

.... **[3]**

There were some good, well organised responses to this question. Some candidates realised that they only had to reduce the price from supermarket B by 10% and compare this with £1.50 to answer the question. Less well-informed candidates worked out lots of prices, including a single packet price and the price for 3 packets. They then concluded by saying that B was cheaper but there was uncertainty as to which prices were being used. Some candidates worked out 10% of £1.60 and thought that this was the cost of a packet. Many non-calculator methods were seen.

Better responses used the dotted answer lines to give a comparison between the two prices being used. Less successful responses involved vague and unclear choices which lacked the required detail.

Exemplar 1

10 Two supermarkets, A and B, have special offers on the same packet of biscuits.

Supermarket A	Supermarket B
Normal price: £1.50 for each packet	Normal price: £1.60 for each packet
Special offer: Buy two packets at the normal price and get a third packet for half price = £0.75	Special offer: 10% off the normal price = 0.16p
3 biscuits = £3.75	1 biscuit = £1.44

(a) Dan buys **one** packet of these biscuits.

Which supermarket is best value for Dan?
Show how you decide.

Supermarket ....B.... because Dan only buys 1 biscuit. In B they offer 10% off normal price. But to get offer at A you need to buy 3. **[3]**

In this exemplar, multiple figures are provided that could represent the cost of a packet. Among these is the single packet price for supermarket B, £1.44. The answer does not specify which price is compared to £1.50 from A and so 3 marks are not given but M2 is credited as it is assumed that it is used to make the comparison.

Candidates should be encouraged to make a comparison using the figures from the question in cases such as this.

Question 10 (b)

(b) Darcy buys **three** packets of these biscuits.

Which supermarket is best value for Darcy?
Show how you decide.

Supermarket .... because ....

.... **[3]**

Similar imprecise responses were seen in this part of the question.

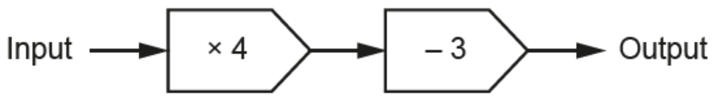
The best organised candidates correctly found the cost of three packets of biscuits from each supermarket. For this they earned M1M1. Candidates who said that 10% of £1.60 was the packet price in (a) (often, but not always, 0.16) were allowed M1 for correctly working out the price of three of these prices.

Less well organised candidates did a lot of working in the answer space for (a) and very little in (b) then made general statements such as A; it is cheaper. Where the prices that were being compared could not be determined, only a maximum of M2 could be given.

Most candidates did not write a conclusive statement at the end of their working that compared the price of three packets from each supermarket. The answer lines are given to prompt candidates to write a sensible comparison in this type of question.

Question 11 (a) (i)

11 Here is a function machine.



(a) **(i)** Find the output when the input is 10.

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

Many correct answers were seen but an incorrect answer of 2 was sometimes given. Candidates wrote down very little working.

Question 11 (a) (ii)

(ii) Find the input when the output is 17.

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

A good number of correct answers were seen, though fewer than in the first part. The common errors were 65, from taking 17 as the input, or 7.75 from ignoring the correct order of operations. Again, not much working was seen and quite a lot of candidates could not reverse the function machine.

Question 11 (b)

(b) The input is x and the output is y.

Write an equation for y in terms of x.

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

A good number of correct responses were seen. The inclusion of the multiplication symbol was condoned but some candidates included arrows and these were not. $4x – 3y$ was a common wrong answer and a minority answered $x = y$.

Question 12 (a)

12 Kai has a bag of marbles that are red or blue or green or yellow.

Kai takes a marble at random, records the colour and returns the marble to the bag.
Kai does this 800 times.

The table shows some of the results.

Colour	Red	Blue	Green	Yellow
Frequency	48	80	296	
Relative frequency	0.06	0.10	0.37	0.47

(a) Complete the table to show the number of times a yellow marble is taken. **[2]**

Many correct answers were seen and more able candidates included working. Some candidates could not complete the addition and subtraction from 800 correctly. Very few used 800 × 0.47 to arrive at the frequency.

Question 12 (b) (i)

(b) **(i)** There are 40 marbles in the bag.

Work out how many blue marbles are likely to be in the bag.

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

This question was not answered well. Candidates rarely used 40 × 0.1, which was the simplest route to the answer. Workings such as 40 ÷ 4 = 10 or 40 ÷ 10 = 4 lead to the very common wrong value of 10. Scaling the total sample down, 800 ÷ 20 = 40, followed by scaling the number of blue marbles, 80 ÷ 20 = 4, was sometimes seen.

The number of incorrect approaches seen, suggested that many did not understand the concept of relative frequency.

Question 12 (b) (ii)

(ii) Is your answer to **part (b)(i)** likely to be the actual number of blue marbles in the bag? Give a reason for your answer.

.... because ....

.... **[1]**

The number of incorrect responses to this part of the question confirmed the lack of understanding of relative frequency. Very few candidates gave the response that there were a large number of trials and so the results were reliable.

Many candidates repeated how they had worked out the number of blue balls, some referred to the selection being random and some just stated yes or no without a reason.

Some candidates commented on the use of 'likely' in the question and some indicated that this was an estimate but in such a way as to suggest the result was a 'guess'.

Assessment for learning

In probability, relative frequency is the number of times an event happens divided by the total number of outcomes. Candidates need to know how to calculate a relative frequency or inversely, how to work out a frequency when the relative frequency is given. They should also be able to discuss and interpret the use of relative frequency as an estimate of probability.

Candidates might find it useful to discuss their responses to this type of question, reading to others in the group and evaluating the validity and coherence of the answer.

Question 13 (a)

13 (a) All of the loaves in a baker's shop cost the same price.
Rowan buys 3 loaves and pays £3.78.
Azmi buys 5 loaves.

Work out how much Azmi pays.

(a) £ .... **[3]**

Responses were usually correct with just the occasional numerical error. Candidates usually showed working and so could gain method marks if such an error occurred. It was clear that calculators were not always used, and written methods were sometimes shown.

Most candidates showed each step of their working. Some candidates found the price of 2 loaves by doubling the 1.26 and then added this onto the 3.78 given. M2 was given to those who used a correct method but did not get the 1.26. Those who scored 0, usually multiplied 3.78 by 3.

Question 13 (b)

(b) Alex and Ling travel the same distance to school.

Alex walks to school in 20 minutes.
Ling runs to school at twice the speed that Alex walks.

Find how many minutes it takes Ling to run to school.

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

This question was answered quite well but 40 minutes was the modal incorrect answer.

Question 14 (a)

14 (a) An integer between 70 and 80 is written as the product of its prime factors as $2 \times 3 \times f$.

Find the value of f and the integer.

(a) f = ...

Integer = ... **[3]**

Most candidates attempted this question but only a small number gained 3 marks. Tree diagrams, products of primes and lists of factors were seen but there were few well organised solutions. Not many candidates started with $2 \times 3 = 6$ and then looked for a prime number such that $6 \times$ prime number = value between 70 and 80. Trial and improvement was the favoured method, but this only occasionally produced the correct result.

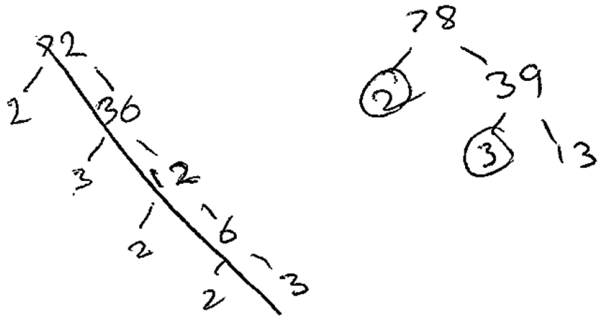
Assessment for learning

Candidates should practise constructing efficient methods, using the evidence in the question, to answer this type of 'problem solving' question.

Exemplar 2

Find the value of f and the integer.

$2 \times 3 \times f$
6×13
$= 78$



(a) f = ...13....................................

Integer = ...78.................................... **[3]**

This response shows clear working involving 2 × 3 = 6 and 6 × prime number (13) to produce a fully correct answer.

Question 14 (b)

(b) 98 and 147 are written as the product of their prime factors.

$98 = 2 \times 7^2$ $\quad\quad 147 = 3 \times 7^2$

Work out the highest common factor (HCF) of 98 and 147.

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

Some candidates gained 2 marks here. Quite a number gained a mark for an answer of 7. Other incorrect answers included 7^3 and a common multiple of 98 and 147.

Question 15 (a)

15 (a) 10^2 is written in words as 'one hundred'.

Write 10^4 in words.

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

Many correct answers were seen, and many did not write 10 000 as part of their working. Stating 10^4 as 10 000 and not in words gained 1 mark. A reasonably common wrong response was 'Ten to the power four'.

Question 15 (b)

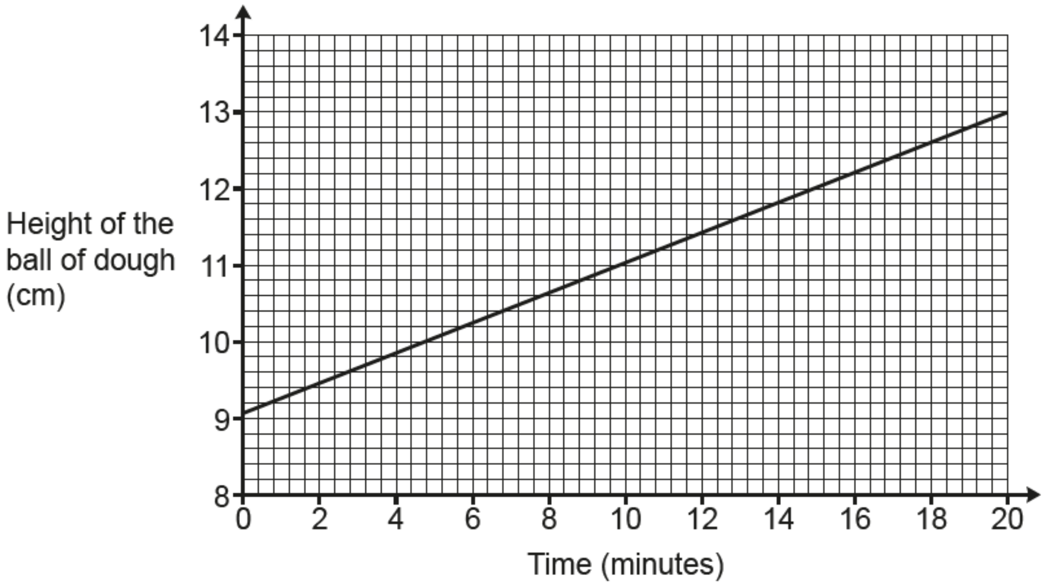
(b) Work out $(3.5 \times 10^{-1}) \times 100$, giving your answer in standard form.

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

The most common response was 35, which gained B1 as it was not in standard form. Workings which included 0.35 appeared sometimes and were also given B1.

Question 16 (a)

16 A ball of dough is left to rise before it is baked.
The graph shows the height of the ball of dough over the first 20 minutes.



(a) Work out the gradient of the line as a decimal, giving the units of your answer.
Show how you work out your answer.

(a) .... **[3]**

From Question 16 onwards, many candidates found the questions challenging.

Very few candidates drew a triangle on the line to create values for the gradient calculation. On the few occasions that triangles were seen they often contained lengths that demonstrated the scales had been misread. Some took a point and divided the *y*-coordinate by the *x*-coordinate. Others left the question blank. Almost no one gave units.

Question 16 (b) (i)

(b) A baker works out the height of the ball of dough at the end of 25 minutes as 14 cm.

(i) Use your gradient to show that the baker could be correct. **[2]**

As part (a) was not well answered this part was rarely attempted. Most of the solutions were imprecise and incorrect. Where candidates did attempt to use their gradient the methods were incorrect.

Some tried to create a sequence of times and heights and extrapolate but this gained no marks as it did not use their gradient, as requested in the question.

Question 16 (b) (ii)

(ii) What assumption has the baker made?

....

.... **[1]**

A few candidates gave the assumption the dough would continue to rise but they did not indicate 'at the same rate' so did not score the mark.

Question 17

17 Frankie draws a circle and works out its area, in cm^2, and circumference, in cm.
The answer for the area is two times the answer for the circumference.

Work out the diameter of the circle.
You must show your working.

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

The modal response was no response. Some candidates did show the correct formulae but did not know what to do with them.

Some attempted trial and improvement but did not always show clear substitution or consistent substitution of the same values in the area and circumference formulae. For some candidates, an attempted substitution of 360 was seen, suggesting a misunderstanding of the topic.

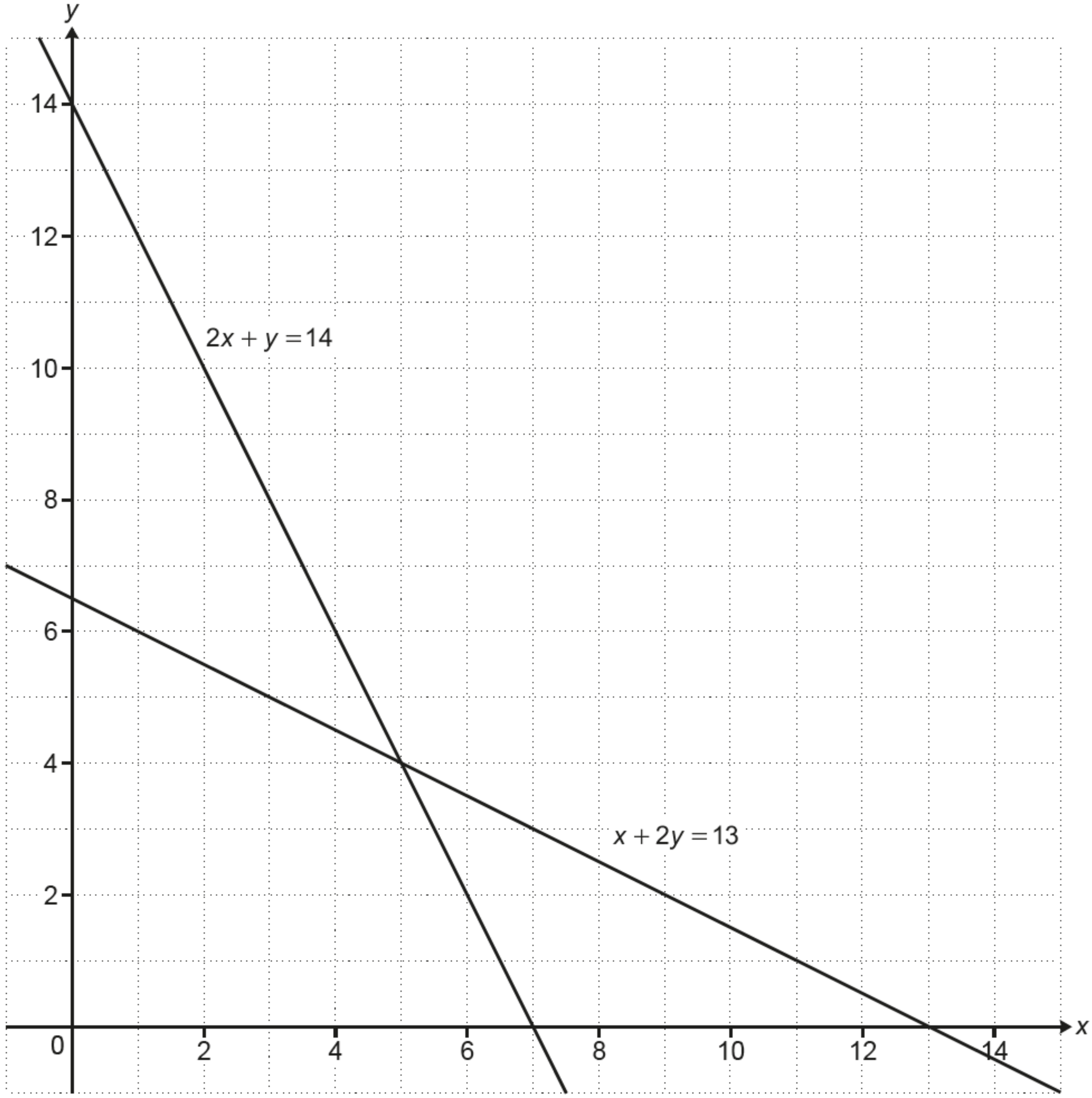
Only the most able candidates tried to construct an equation between the two formulae.

Question 18

18 The graph shows the solution to this pair of simultaneous equations.

$2x + y = 14$
$x + 2y = 13$

Use the solution to work out the value of $3x + y$.
You must show how you work out your answer.



$3x + y =$ .... **[3]**

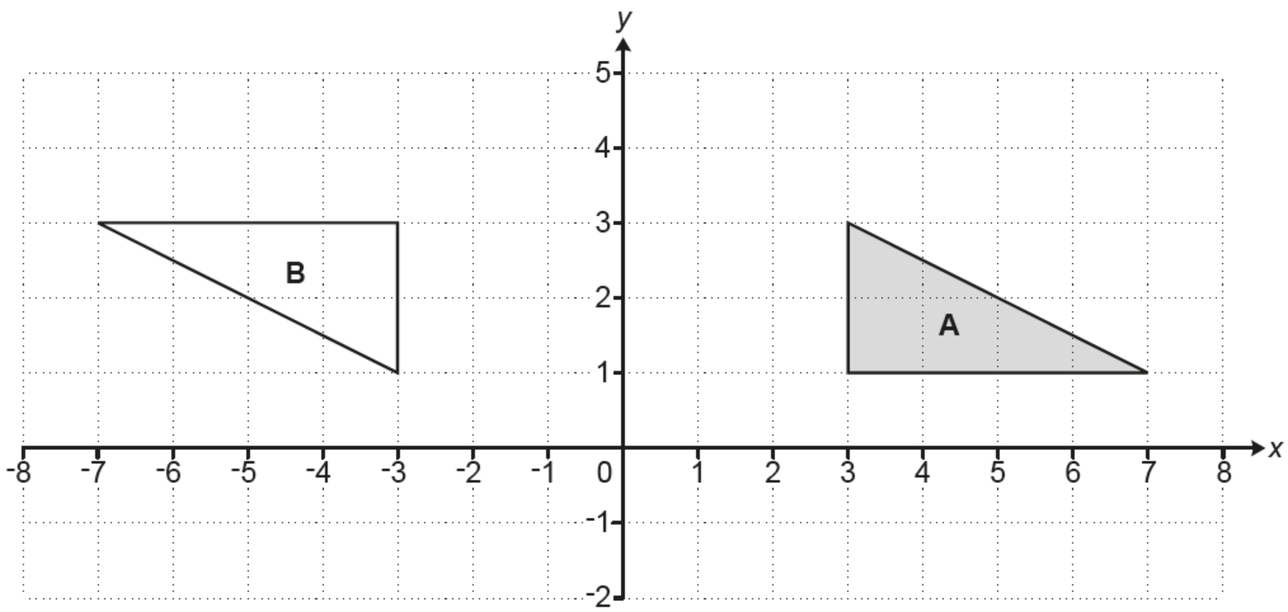
Very few candidates made a sensible attempt at this question. Some attempts indicated a lack of understanding of the solution of two equations being the point of intersection. Some solved the equations using algebraic methods. Some drew a line that they labelled '$3x + 2y$' but offered no solutions. Some put a mark at the point of intersection but did no more.

Some candidates found $x = 5$ and $y = 4$ and gave the answer 19 but did not show a clear substitution of these values into $3x + y$ and so gained only 2 marks. Some stated a value for x and y that was not (5, 4). If they then showed a clear substitution into $3x + y$ and their answer was correct, they also gained 2 marks.

In 'Show ...' questions candidates must show clearly all the steps of working required to get to the answer.

Question 19

19 Triangle **A** and triangle **B** are drawn on the coordinate grid.



Describe fully the **single** transformation that maps triangle **A** onto triangle **B**.

....

.... **[3]**

Very few candidates gained 3 marks in this question. Some candidates gained a mark for recognising rotation, but terms often used such as 'turned' or 'flipped' were not accepted and scored no marks. Few candidates gave the coordinates of the centre and the degree of rotation was only given sometimes.

A few candidates gave a combination of transformations such as 'rotated and then moved...' and this scored 0 marks.

Question 20

20 $\overrightarrow{PQ} = \begin{pmatrix} 3 \\ 2 \end{pmatrix}$ and $\overrightarrow{QR} = \begin{pmatrix} 4 \\ 1 \end{pmatrix}$.

Work out $\overrightarrow{PR}$.

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

Only a very small number of candidates scored a mark here and the correct answer was rarely seen.

Most candidates chose to multiply or cross multiply the components of the vectors and $\begin{pmatrix} 3 \\ - \\ 1 \end{pmatrix}$ was sometimes seen.

This topic was not well understood by most candidates.

Question 21

21 Solve.

$x^2 - 4x - 165 = 0$

You must show your working.

$x =$ .... or $x =$ .... **[3]**

A very small minority correctly factorised and found correct values for x. Trial and improvement was the favoured technique and a few scored a mark when clear substitution, and a result, was seen. Stating one of the solutions but showing no working scored 0 marks. Some, wrongly, tried to treat this as linear equation and no marks were scored for this.

This topic was not well understood by most candidates.

Question 22

22 A recipe for a batch of jam needs 3 oranges, 5 lemons and 1.5 kg of sugar.
A cook uses the recipe to make lots of batches of jam.
They use 16 **more** lemons than oranges in total.

Find how much sugar the cook should use.

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

This was the first of the common questions with Higher Tier and a few good answers were seen. Some candidates listed sets of quantities until a difference of 16 lemons was found. Some attempted this method but did not complete the values correctly. Some only listed lemons. Some misread '16 **more** lemons' and thought that 16 lemons were used.

Some candidates went straight to 8 batches and produced an answer very quickly.

Question 23 (a)

23 Sam and Taylor are playing a game against a computer.
They can win, draw or lose the game.

Sam says

I think the probability of us winning the game is 0.3.

Taylor says

I think the probability of us losing the game is 0.75.

(a) Explain why Sam and Taylor cannot both be correct.

....

.... **[1]**

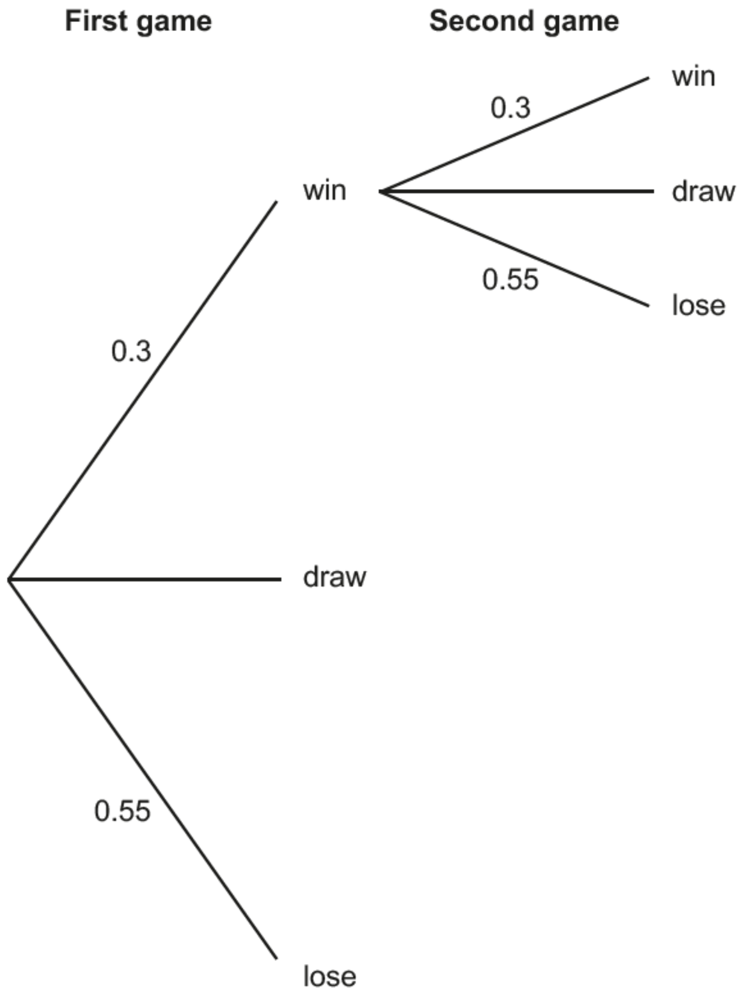
Many almost correct answers were seen but few correct ones. Candidates clearly knew about the significance of 1 in probability and often said that probabilities had to add to 1 and these did not. Relatively few stated that 0.3 and 0.75 added to more than 1 and so could not be possible.

Several candidates falsely claimed that Sam was right because there had to be an equal chance of winning, drawing and losing, probably thinking that $\frac{1}{3} = 0.3$.

Question 23 (b)

(b) Sam is correct. The probability of them winning the game is 0.3.
Taylor is not correct. The probability of them losing the game is actually 0.55.

Complete this **partly drawn** tree diagram to show **all** the possible outcomes of playing the game twice.



[3]

A number of candidates scored 1, 2 or 3 marks in this part. Most who attempted the question worked out that the probability of a draw was 0.15 to earn B1, although (1 – 0.58 =) 0.42 was seen. Some candidates earned B1 for completing and labelling the branches of the tree and some put correct probabilities on the branches. A significant minority of the attempts did not include the branches for the lower part of the diagram.

Question 23 (c)

(c) Find the probability of them winning the first game and losing the second game.

(c) .... **[2]**

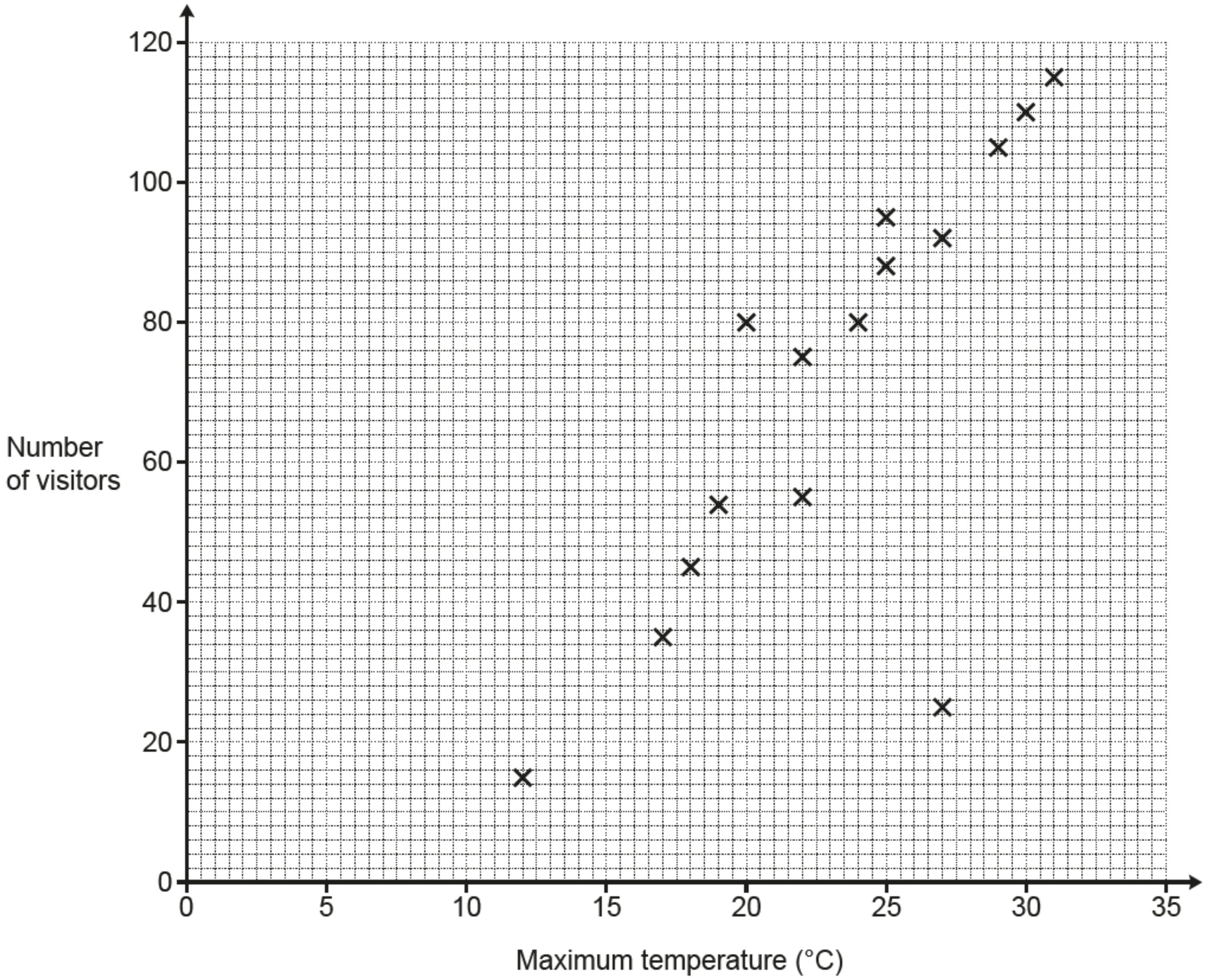
0.85 was the common answer from incorrectly choosing to add the required probabilities. A very small minority correctly multiplied the probabilities.

Assessment for learning

In probability 'and' usually implies the need to multiply and 'or' implies the need to add. In the case of a tree diagram, multiply along the branches and add the answers.

Question 24 (a)

24 The scatter diagram shows the number of visitors to a children's playground and the maximum temperature on fifteen Saturdays in summer.



(a) Describe the type of correlation shown in the scatter diagram.

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

Almost all candidates correctly described the correlation as 'positive'. 'Scattered', 'straight line' and 'more temperature more visitors' were common wrong responses.

Question 24 (b) (i)

(b) One Saturday was a hot but stormy day.

(i) Circle the most likely point on the scatter diagram for this Saturday. **[1]**

Most candidates circled the correct point.

Question 24 (b) (ii)

(ii) Explain why you chose this point.

....

.... **[1]**

A reasonable number of correct responses were seen which generally included the hot weather and the low number of visitors. Outlier was accepted but reasons such as 'it did not fit the correlation' or 'it was far from the line of best fit' were not accepted.

Question 24 (c)

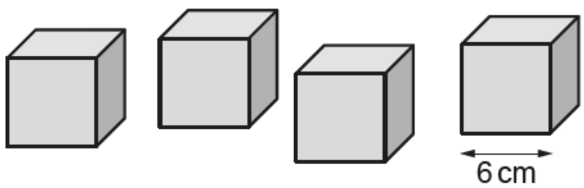
(c) Use a line of best fit to predict the number of visitors on a Saturday that has a maximum temperature of 21 °C.

(c) .... visitors **[2]**

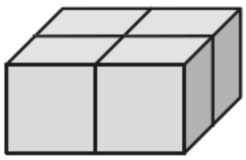
Most candidates ruled a line of best fit that was suitably long and fitted the data. Some sketched the line and were not given the mark. A significant number thought that the line had to pass through the origin and so their line was out of tolerance. Many gave an acceptable value for the number of visitors.

Question 25 (a)

25 A child has four identical wooden cubes of side length 6 cm.



(a) They arrange the cubes in a 2 by 2 by 1 arrangement to form a cuboid.



Show that the surface area of the cuboid is 576 cm^2. **[2]**

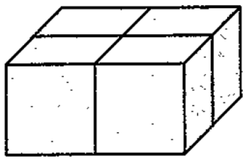
Very few correct responses were seen for this question.

This was a 'Show that…' question and, therefore, candidates needed to make it clear how they were obtaining the given answer of 576 cm^2. Structured evidence with no omissions or incorrect work was required.

Most realised that 36 was the area of one face of a cube but were unsure how to proceed. Some found the area of the upper face as 144 and then said 144 × 4 = 576 without showing any logic for this statement. Others found the area 144, doubled it to 288 and then said 288 + 288 = 576, again with no logic or justification for the working. Others showed 6 × 4 = 24 and then $24^2 = 576$.

Very few candidates annotated their solutions to support their calculations or values given.

Exemplar 3



6x6 = 36   36x16 =

Show that the surface area of the cuboid is 576 cm^2. **[2]**

6x6 = 36

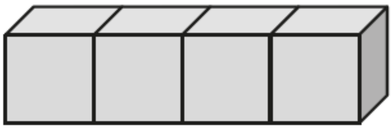
16 x 36 = 576

16 Faces of the Squares can be Seen

In this exemplar there is clear working to find the area of one face and the calculation is explained. Adding annotations to the solution such as 'area of one face = 6 × 6 = 36' and 'there are 16 faces' would be helpful. In this response the final comment does explain where the figures have come from so 2 marks were given.

Question 25 (b)

(b) The child rearranges the cubes in a 4 by 1 by 1 arrangement to form a different cuboid.



Calculate the percentage increase in surface area for this cuboid compared with the 2 by 2 by 1 cuboid.

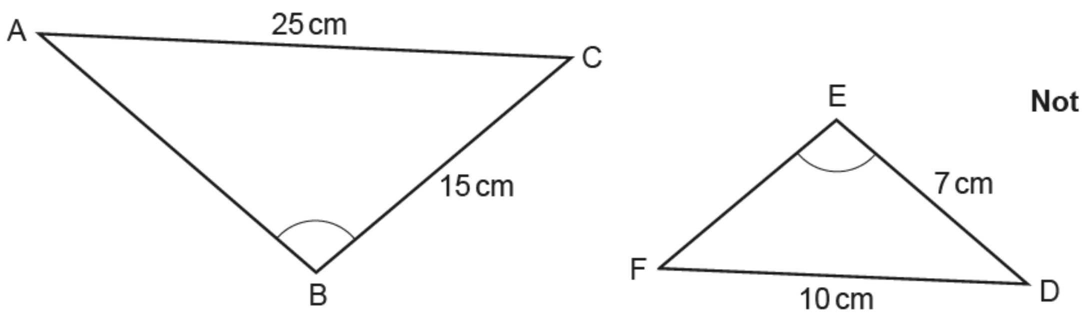
(b) .... % **[4]**

A tiny minority of candidates found the correct surface area of this cuboid. Very few candidates made a valid attempt to find the area of the cuboid.

For the percentage calculation, many incorrectly used this surface area as the denominator rather than the 576 from the 2 by 2 by 1 arrangement.

Question 26

26 Triangles ABC and DEF are mathematically similar.
Angle ABC = Angle DEF.



Not to scale

Calculate the perimeter of triangle ABC.

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

A small number of correct answers were seen. A slightly larger number of candidates found a scale factor but then misused it. Many assumed that triangle ABC was isosceles, so stated AB was 15 cm. Others tried Pythagoras' Theorem or trigonometry, assuming the triangles to be right-angled and others tried to add amounts to each side.

This topic was not well understood by most candidates.

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