



**CAMBRIDGE**  
International Education

# Specimen Paper Answers Paper 1 Non-calculator (Core)

Cambridge IGCSE™ / Cambridge IGCSE™ (9–1)  
Mathematics 0580/0980

For examination from 2025



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## Introduction

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These specimen answers have been produced by Cambridge International ahead of the examination in 2025 to exemplify approaches to the questions for those teaching Cambridge IGCSE Mathematics (0580). Questions have been selected from Specimen Paper 1, Questions 6, 9, 10, 13, 14, 15(a), 16(b), 17, 18, 20(b), 21 and 23.

These are model answers. The working is accompanied by a brief commentary explaining alternative approaches or key considerations for the answers. Comments include more information about common misconceptions and key steps in working for students to be aware of.

The specimen materials are available to download from the School Support Hub at [www.cambridgeinternational.org/support](http://www.cambridgeinternational.org/support)

**2025 Specimen Paper 01**

**2025 Specimen Paper Mark Scheme 01**

Past exam resources and other teaching and learning resources are available on the School Support Hub [www.cambridgeinternational.org/support](http://www.cambridgeinternational.org/support)

## Details of the assessment

The syllabus for Cambridge IGCSE Mathematics 0580 is available at [www.cambridgeinternational.org](http://www.cambridgeinternational.org)

### Assessment overview

All candidates take two components.

Candidates who have studied the Core subject content, or who are expected to achieve a grade D or below, should be entered for Paper 1 and Paper 3. These candidates will be eligible for grades C to G.

Candidates who have studied the Extended subject content, and who are expected to achieve a grade C or above, should be entered for Paper 2 and Paper 4. These candidates will be eligible for grades A\* to E.

Candidates should have a scientific calculator for Paper 3 and Paper 4. Calculators are **not** allowed for Paper 1 and 2.

Please see the *Cambridge Handbook* at [www.cambridgeinternational.org/eoguide](http://www.cambridgeinternational.org/eoguide) for guidance on use of calculators in the examinations.

### Core assessment

Core candidates take Paper 1 and Paper 3. The questions are based on the Core subject content only:

#### Paper 1: Non-calculator (Core)

1 hour 30 minutes  
80 marks 50%  
Structured and unstructured questions  
Use of a calculator is **not** allowed  
Externally assessed

#### Paper 3: Calculator (Core)

1 hour 30 minutes  
80 marks 50%  
Structured and unstructured questions  
A scientific calculator is required  
Externally assessed

### Extended assessment

Extended candidates take Paper 2 and Paper 4. The questions are based on the Extended subject content only:

#### Paper 2: Non-calculator (Extended)

2 hours  
100 marks 50%  
Structured and unstructured questions  
Use of a calculator is **not** allowed  
Externally assessed

#### Paper 4: Calculator (Extended)

2 hours  
100 marks 50%  
Structured and unstructured questions  
A scientific calculator is required  
Externally assessed

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## Question 6

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### Specimen answer

6 Write the ratio  $90 : 120$  in its simplest form.

$$90 : 120 = 9 : 12 = 3 : 4$$

.....<sup>3</sup>..... : .....<sup>4</sup>..... [1]

### Examiner comment

Many candidates will be able to do this mentally and write down the final answer in one step. There are various common factors of 90 and 120 candidates can use as initial steps to simplify the ratio. For example 2, 3, 5, 6, 15, 30 are all possible but, with the zeros present, 10 is the most obvious divisor to use first.

### Common errors and general guidance for candidates

- It is advisable to divide by 10 as a first step to simplify the question, before dividing by 3.
- If candidates don't read the question carefully, they may leave the answer as  $9 : 12$  and the mark would not be awarded.
- Candidates should check the digits in the answer are written in the correct order,  $3 : 4$  and not  $4 : 3$ .
- As this question is on a non-calculator paper the numbers chosen for the ratio are easily simplified. A similar question on Paper 3 may involve larger numbers that can be simplified with the use of a calculator.

## Question 9

### Specimen answer

9 A cake has a mass of 600 g.

Joe eats  $\frac{1}{5}$  of the cake.

Find the mass of the cake that is left.

I need  $\frac{4}{5} \times 600$

$$\frac{1}{5} \times 600 = 600 \div 5 = 120$$

$$600 - 120 = 480 \text{ OR } 120 \times 4 = 480$$

..... 480 ..... g [2]

### Examiner comment

Many candidates will be able to do this mentally but as the question is worth 2 marks it is advisable to write down the working as a mark is available for this. If the answer is incorrect there is a mark available for either correctly finding  $\frac{1}{5}$  of 600 or for showing the complete method for finding  $\frac{4}{5}$  of 600.

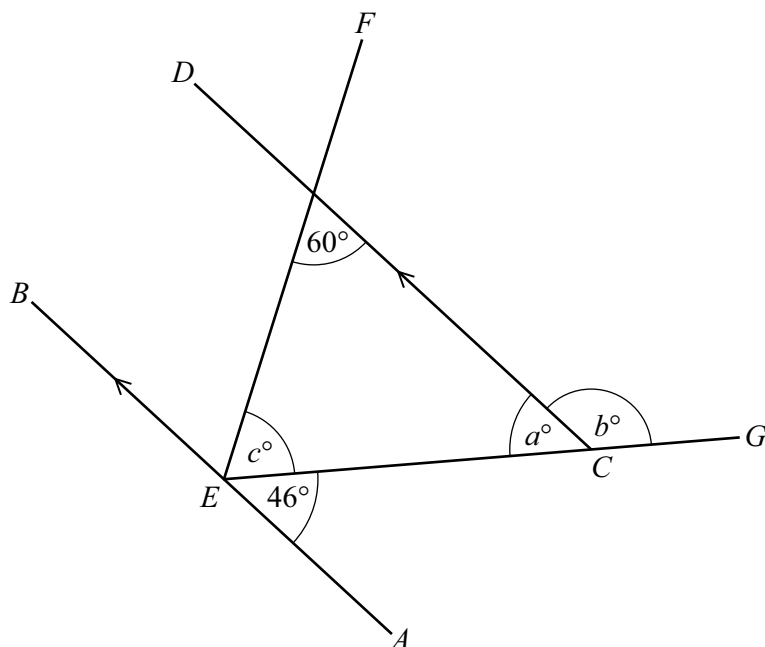
### Common errors and general guidance for candidates

- It is possible for the candidate to multiply 600 by 4 first then divide by 5 but this is more likely to result in an arithmetic error.
- Showing all working is important. If a candidate writes  $\frac{1}{5} \times 600$  but evaluates it incorrectly, then shows either multiplication by 4 or subtraction from 600, then the Method mark would still be awarded.
- An error could be made by candidates who don't read the question carefully and stop after calculating only  $\frac{1}{5}$  of 600 instead of finding the amount that remains.
- As this question is on a non-calculator paper the numbers chosen are reasonable for candidates to process. A similar question on Paper 3 may involve numbers that can be evaluated with the use of a calculator.

## Question 10

### Specimen answer

10

NOT TO  
SCALE

Lines  $AB$  and  $CD$  are parallel.  
 $EF$  and  $EG$  are straight lines.

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

$a = 46^\circ$  because Alternate angles are equal. [2]

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

$$180 - 46 = 134.$$

$b = 134^\circ$  because Sum of angles at a point on a straight line sum to  $180^\circ$

..... [2]

- (c) Find the value of  $c$ .  
 Give a geometrical reason for your answer.

$$46 + 60 = 106, \quad 180 - 106 = 74^\circ$$

$c = 74^\circ$  because Angles in a triangle add to  $180^\circ$

..... [2]



## Examiner comment

- (a) Candidates are expected to recognise and write the geometrical reason clearly and fully.
- (b) Many candidates will be able to do this mentally. It is advisable to write down the working to help avoid arithmetic errors in reaching the answer of  $134^\circ$ , which is awarded 1 mark. Candidates should note that the working is not the geometrical reason required and no credit is given for it. As this part relies on angle  $a$ , the mark here is a follow through mark for evaluating  $180 - \textit{their (a)}$ . Candidates are expected to recognise and write the geometrical reason clearly and fully in order to be awarded the second mark.
- (c) As in the previous part, many candidates will be able to do this mentally. Again, it is advisable to write down the working to help avoid arithmetic errors in reaching the answer of  $74^\circ$ , which is awarded 1 mark. No credit is given for the working in this part and it is not the geometrical reason required. As this part relies on angle  $a$ , the mark here is a follow through mark for evaluating  $180 - \textit{their (a)} - 60$ . Candidates are expected to recognise and write the geometrical reason clearly and fully in order to be awarded the second mark.

## Common errors and general guidance for candidates

- In (a), candidates can sometimes assume the triangle is equilateral or isosceles resulting in an incorrect solution.
- To gain credit in (a), candidates must not shorten 'alternate' to 'alt' nor should they give incorrect words such as 'alternating' or 'alternative'. A description of alternate angles such as 'angles in a zigzag' or 'inside parallel lines' would gain no credit. The reason 'Z angles' is not acceptable. Similarly, if the correct reason was 'corresponding angles are equal' then 'F angles' is not acceptable.
- Candidates often confuse geometrical reasons and give the wrong one. For example, they may quote the reason as 'co-interior angles are equal' instead of 'alternate angles are equal'.
- It can be helpful to candidates if angles they know are copied onto the diagram in the correct place if further angles need to be found in later parts of the question.
- In general, in angle questions candidates often assume an angle is  $90^\circ$  when it is not.

## Question 13

### Specimen answer

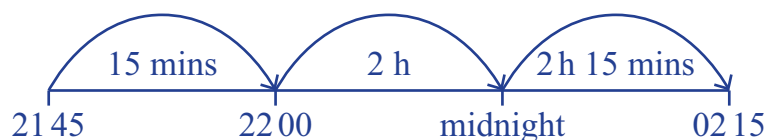
- 13 A plane flies from London to Colombo.  
 The time in London when the plane leaves is 08 20 on Saturday.  
 The time in Colombo when the plane arrives is 02 15 on Sunday.  
 The flight time is 13 hours 25 minutes.

Find the time difference between London and Colombo.  
 State whether the time in Colombo is ahead or behind the time in London.

Time leaving London plus flight time to Colombo is  $08\ 20 + 13\ \text{h}\ 25\ \text{mins}$

$$\begin{array}{r} 08\ 20 \\ + \quad \underline{13\ 25} \\ \hline 21\ 45 \quad \text{arrival time in Colombo} \end{array}$$

Time difference from 21 45 to local time of 02 15

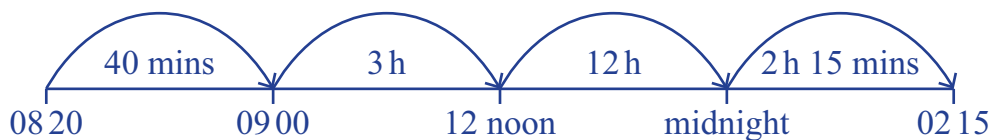


$$\begin{array}{r} \text{h min} \\ 15 \\ 2 \\ + \quad \underline{2\ 15} \\ \hline 4\ 30 \end{array}$$

So Colombo is 4 hours 30 mins ahead of London

OR

Total time difference from London 08 20 Saturday to Colombo 02 15 Sunday



$$\begin{array}{r} \text{h min} \\ 40 \\ 3 \\ 12 \\ + \quad \underline{2\ 15} \\ \hline 17\ 55 \end{array}$$

Total time difference 17 h 55 mins minus flight time 13 h 25 mins is

$$\begin{array}{r}
 \text{h} \quad \text{min} \\
 17 \\
 55 \\
 - \quad 13 \quad 25 \\
 \hline
 \quad \quad 4 \quad 30
 \end{array}$$

So Colombo is 4 hours 30 mins ahead of London

[3]

## Examiner comment

Many candidates find this type of question involving intervals of time, time zones and local times difficult. Careful reading of the question is required in order to understand the information given and what the solution requires.

Two possible methods are shown. The first method adds the flight time to the time the plane leaves London and a part mark of B1 is awarded for finding the arrival time 21 45. The next step is to find the time difference from 21 45 to the local time in Colombo. Reaching this value of 4½ hours earns part marks of B2. Finally, the candidate needs to state the time in Colombo is ahead of the time in London to be awarded all 3 marks for this question. In the second method the total time difference between the local times in London and Colombo is calculated first, 17 h 55 mins, then the flight time is subtracted. A partial Method mark is available for showing a clear and complete method if the answer is incorrect. This method is written in an equivalent form in the mark scheme.

An alternative method would be to subtract the flight time from the arrival time in Colombo, leading to 12 50 which earns a part mark of B1, then finding the time difference from 12 50 back to 08 20, the take-off time for the plane. All methods are equally valid.

It is highly recommended that candidates show clear working in this question in order to gain the partial credit marks if the final answer is incorrect. Candidates are not required to show their working on a number line as shown, but it is suggested as a possible way of counting hours for some candidates. Candidates need to take particular care when writing addition sums when the minutes add to more than 60 and when subtraction sums require an hour to be 'borrowed', in order to subtract the minutes successfully.

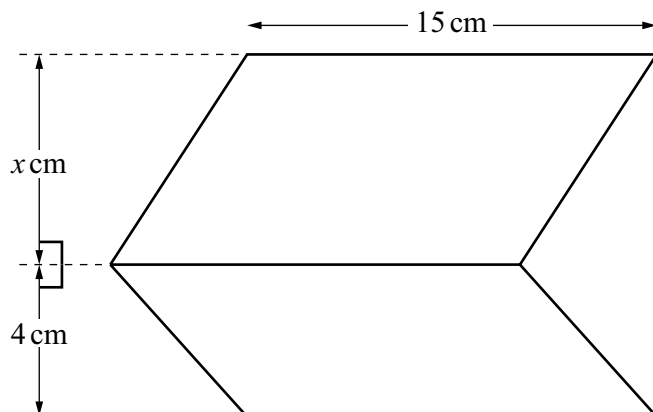
## Common errors and general guidance for candidates

- This question requires more than one stage of working so planning is required to show the working in clear ordered steps within the workspace.
- Candidates need to remember that there are 60 minutes in an hour when finding intervals of time. Errors are made by candidates who use 100 minutes in an hour when adding or subtracting times.
- Candidates often include the starting time as an hour when finding an interval and write an answer that is one hour more than the correct answer.
- Common errors seen using time notation that do not earn credit include:  
 confusing am and pm e.g. writing 02 15 as 2 15 pm  
 writing a final answer e.g. 03 55 as 03 55 am  
 writing e.g. 2 hours 15 minutes as 2.15

## Question 14

### Specimen answer

- 4 The diagram shows a shape made from two different parallelograms. The shape has a total area of  $210 \text{ cm}^2$ .



NOT TO  
SCALE

Find the value of  $x$ .

$$\text{Area of bottom parallelogram} = 15 \times 4 = 60$$

$$\text{Area of top parallelogram} = 210 - 60 = 150$$

$$x = 150 \div 15 = 10 \text{ cm}$$

$$x = \dots\dots\dots 10 \text{ cm} \dots\dots\dots [4]$$

### Examiner comment

This multi-stage question requires candidates to analyse the problem and identify a suitable strategy for solving it before any calculations are done. The first step is to find the area of the bottom parallelogram. There is a Method mark available for the working  $15 \times 4$  or the correct area of 60. The next step is to find the area of the top parallelogram by subtracting 60 from the total area of the shape, 210. A follow through Method mark is available for showing this calculation or reaching the correct value 150. The final step is to find the value of  $x$  by dividing the area of the top parallelogram by its length, 15. There is a further follow through Method mark available for showing this step and, if the final answer of  $x = 10$  is reached, then 4 marks can be awarded.

Some candidates may wish to write an equation,  $15 \times 4 + 15 \times x = 210$ , and solve it to find the value of  $x$ . This is an equally valid method and the Method marks would be gained in the same way as the solution shown.

### Common errors and general guidance for candidates

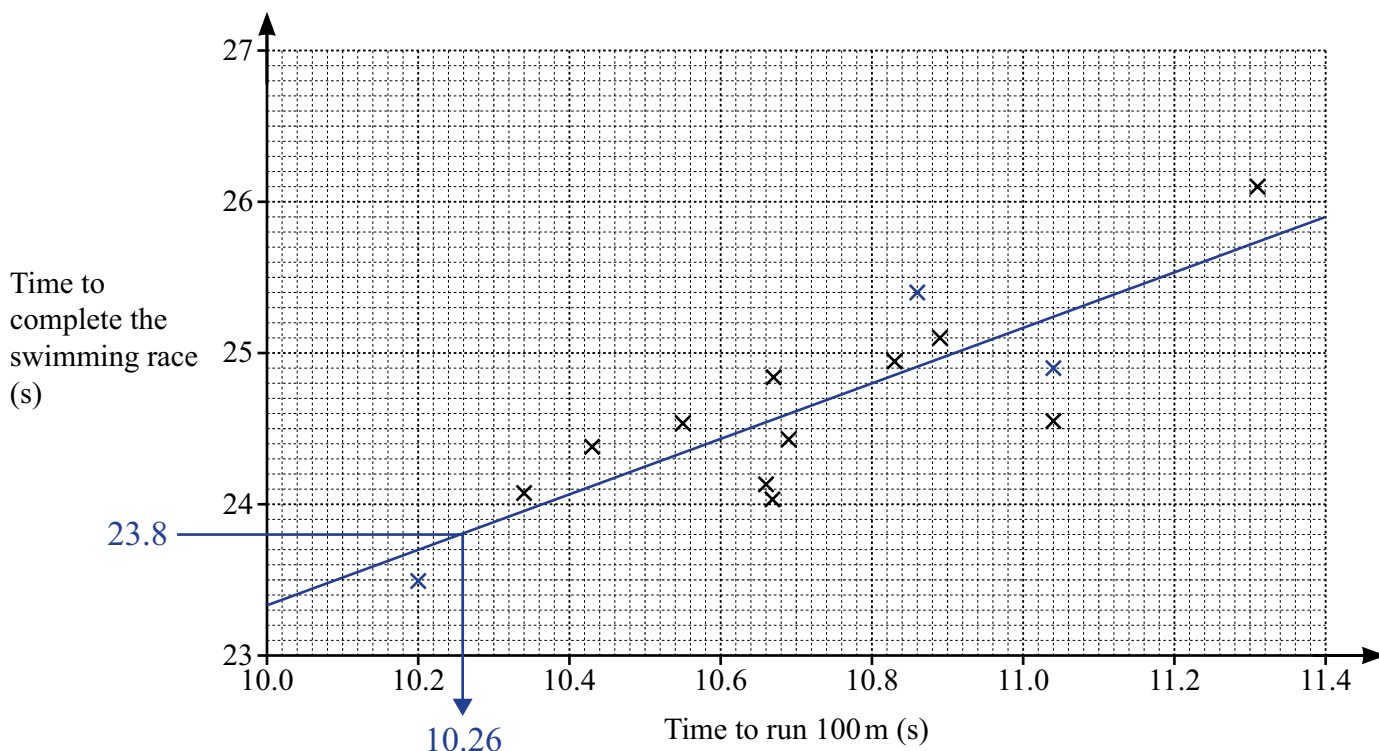
- The formula for the area of a parallelogram is not given on the formula page so candidates need to learn it. This will avoid errors using the wrong formula such as  $\frac{1}{2} \times \text{base} \times \text{height}$  for a triangle.
- It is strongly recommended that candidates treat such questions as a series of steps to be done. The working for each step should be clearly shown in order to gain the follow through Method marks even if an arithmetic error is made along the way.
- Since this question is on the non-calculator paper the numbers used are easy to compute. Candidates should be aware that a similar question on Paper 3 may have numbers that require the use of a calculator for their evaluation.

## Question 15(a)

### Specimen answer

15 (a) As part of a sports competition, 14 athletes run 100 m and complete a swimming race.

The scatter diagram shows the times, in seconds, to run 100 m and the times, in seconds, to complete the swimming race, for 11 of these athletes.



The table shows the times for the other 3 athletes.

Time to run 100 m (s)	10.20	10.86	11.04
Time to complete the swimming race (s)	23.5	25.4	24.9

- (i) On the scatter diagram, plot these three points. [2]
- (ii) State the type of correlation shown in the scatter diagram.  
 ..... positive ..... [1]
- (iii) On the scatter diagram, draw a line of best fit. [1]
- (iv) Another athlete completes the swimming race in 23.8 seconds.

Use your line of best fit to estimate the athlete's time to run 100 m.

..... 10.26 ..... s [1]

## Examiner comment

- (a) (i) Candidates are expected to plot the three points accurately on the scatter graph. The important things to note are the scales used. Candidates need to understand that each small square on the horizontal axis represents 0.02 and each small square on the vertical axis represents 0.1. A part mark of B1 is available for 2 points plotted correctly. It is recommended that candidates use a small cross (×) to show each plot.
- (a) (ii) Candidates are required to recognise the type of correlation shown is positive. They are not required to embellish their answer with additional descriptions such as ‘strong’ or ‘weak’. Credit is neither given nor lost for this extra information.
- (a) (iii) A correct line of best fit should be a single continuous (i.e. not dashed) ruled line that covers the whole width of the scatter graph and passes roughly through the middle of the plotted points so they are either side of it in roughly equal numbers. The line should represent the trend of the points.
- (a) (iv) A mark is awarded if the candidate reads across from 23.8 on the vertical scale to their line of best fit, then downwards to the horizontal scale and correctly gives this value as their answer. Note, this mark is a follow through mark.

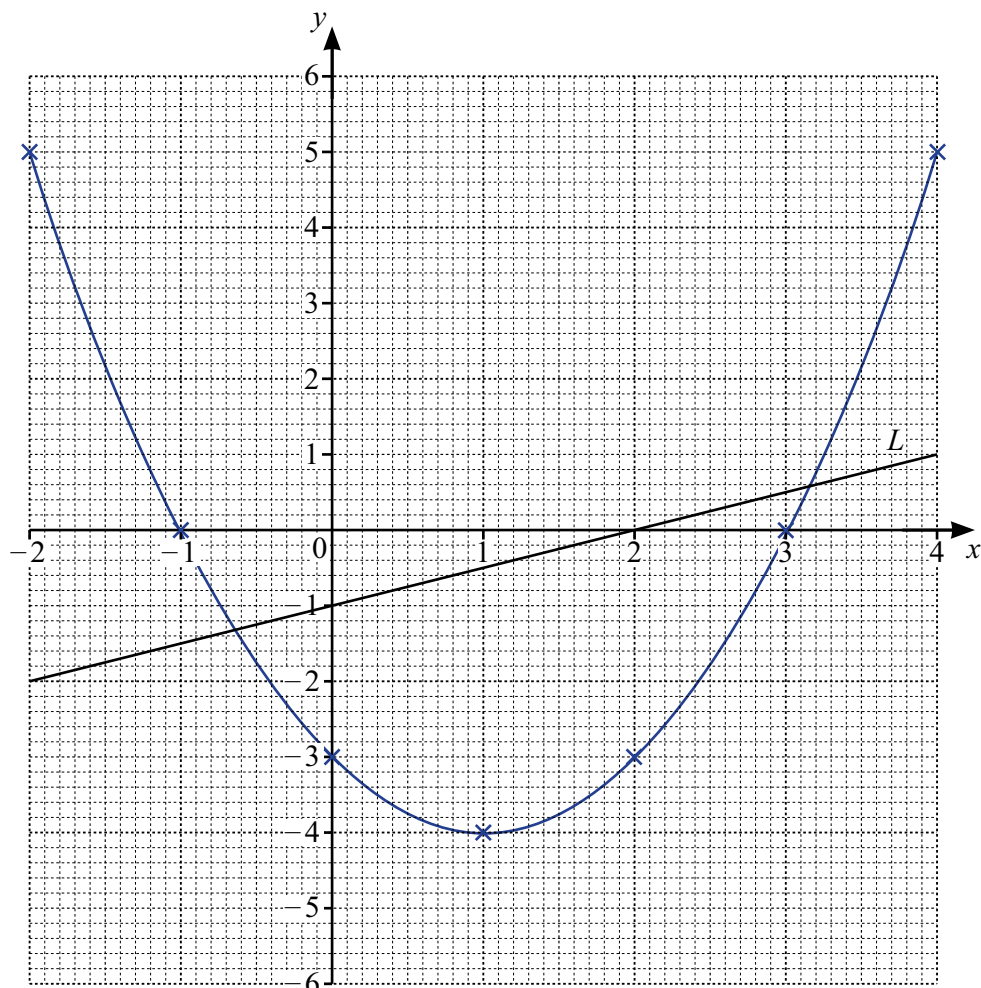
## Common errors and general guidance for candidates

- In (a)(i) the points need to be plotted carefully and accurately for the marks to be awarded.
- In a scatter graph candidates should never join the points together in a dot-to-dot style.
- When asked to state the type of correlation shown in a scatter graph candidates should only state ‘positive’, ‘negative’ or ‘no correlation’ as appropriate. They should not give a comment on how the variables change in relation to each other. For example, in (a)(ii) in this question, a comment such as ‘as the time taken to run 100m increases the time taken to complete the swimming race increases’ would not be awarded the mark.
- A line of best fit does not need to go through the origin.

## Question 16(b)

### Specimen answer

16 The line  $L$  is shown on the grid.



(b) The table shows some values for  $y = x^2 - 2x - 3$ .

$x$	-2	-1	0	1	2	3	4
$y$	5	0	-3	-4	-3	0	5

(i) Complete the table.

[2]

$$y = (-2)^2 - 2 \times (-2) - 3 = 4 + 4 - 3 = 5$$

$$y = 1^2 - 2 \times 1 - 3 = 1 - 2 - 3 = -4$$

$$y = 4^2 - 2 \times 4 - 3 = 16 - 8 - 3 = 5$$

(ii) On the grid, draw the graph of  $y = x^2 - 2x - 3$  for  $-2 \leq x \leq 4$ .

[4]

## Examiner comment

- (b) (i) Many candidates will be able to do this mentally. It is advisable to write down the working as shown. A part mark of B1 is awarded if only two correct values are found.
- (b) (ii) A correct curve should be a smooth continuous curve that passes through the seven correctly plotted points. Part marks of B3, B2 or B1 are available dependent on the number of correctly plotted points with a follow through applied from part (b)(i).

## Common errors and general guidance for candidates

- Care needs to be taken when squaring negative values. In particular, in a similar question on Paper 3 it is essential that brackets are inserted around negative values that are squared if a calculator is used, otherwise the answer will be incorrect.
- Points must be plotted accurately. It is recommended that candidates use a small cross (×) to show each plot.
- Candidates should know the shape of a quadratic curve and therefore recognise when a point is plotted in the wrong position causing an incorrect 'bump' in the curve.
- Candidates should not draw curves that are too 'thick'. They should erase repeated attempts at curves; only the curve to be marked should be visible.
- In some cases, the minimum or maximum point of a quadratic curve is not one of the values found in the table. Candidates could evaluate the  $y$ -coordinate for this point by substituting the relevant  $x$  value into the given equation. Plotting this extra point would avoid curves with flat sections at the top or bottom that are not awarded full marks.





## Examiner comment

- (a) The important thing to know is that the probabilities on each pair of branches within the tree diagram must add up to 1. For Bag A the missing probability is 0.2 since  $0.8 + 0.2 = 1$ . For Bag B the probabilities on each pair of branches must be 0.3 and 0.7 since  $0.3 + 0.7 = 1$ . There is a partial Method mark available if only two or three correct probabilities are written on the diagram.
- (b) The tree diagram gives rise to four possible combinations of outcomes; Blue, Blue or Blue, White or White, Blue or White, White. To calculate the probability of each of these outcomes the values on the branches of the diagram must be multiplied along each route. For the required outcome (White, White) the values 0.2 and 0.7 must be multiplied together from the lowest branches. It is important that the working is shown as there is a Method mark for showing the values to be multiplied even if the final answer is incorrect. Both marks in this part are follow through marks from their (a).

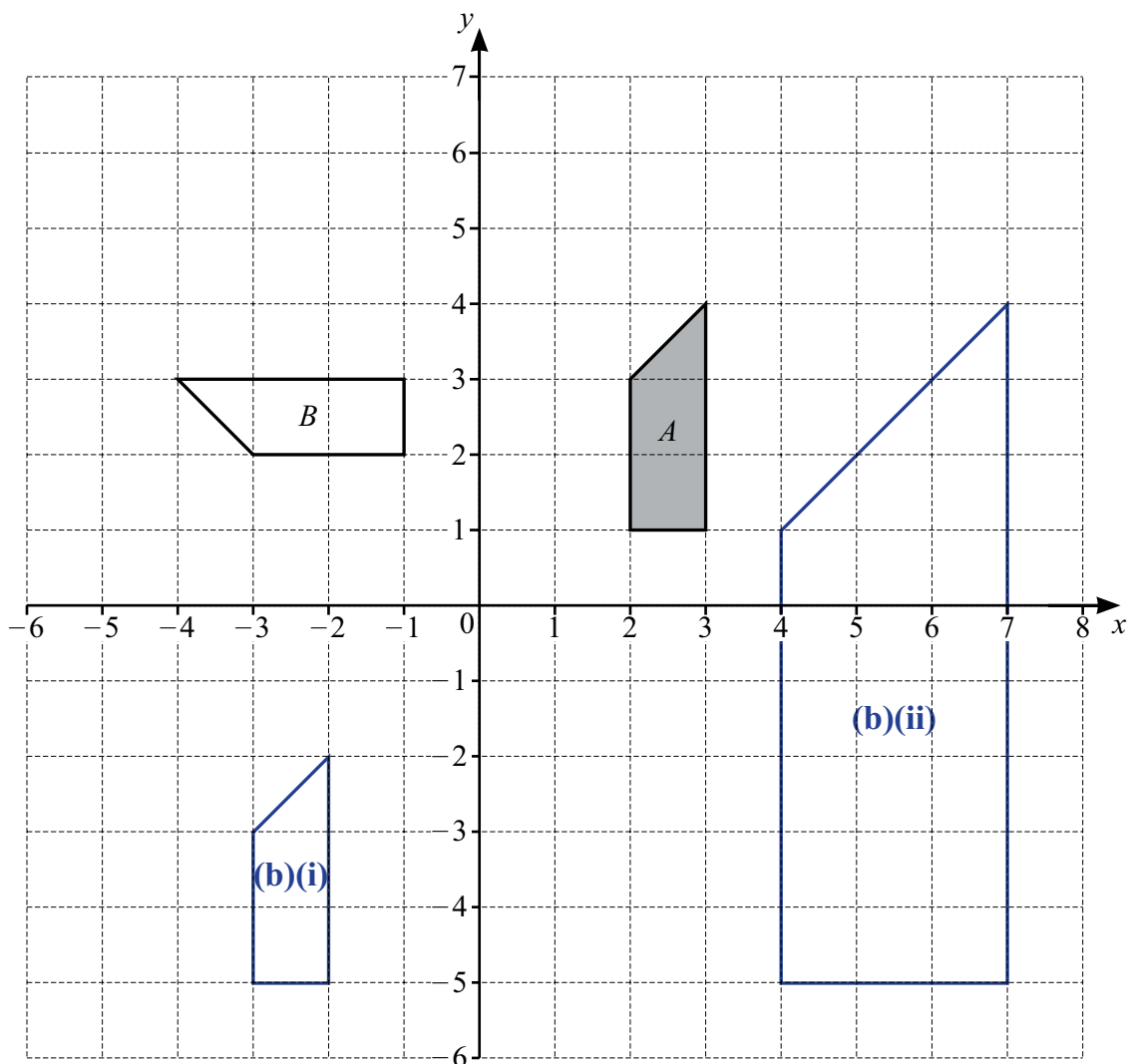
## Common errors and general guidance for candidates

- It is possible to write the missing probabilities as equivalent fractions or percentages but this is not recommended as errors and/or inaccuracies may occur in their conversion. Candidates should use the same format given in the question.
- In questions where the answer is a fraction, it does not need to be written in its simplest form unless the question states otherwise.
- In a similar question on Paper 3 the probabilities may involve values that require the use of a calculator to evaluate.
- A common error is made by candidates who add the individual probabilities instead of multiply them when finding the probability of a combined event. This often gives rise to answers that are bigger than 1, which candidates should realise is impossible.

## Question 18

### Specimen answer

18



- (a) Describe fully the **single** transformation that maps shape *A* onto shape *B*.

Rotation,  $90^\circ$  anticlockwise, centre  $(0, 0)$

[3]

- (b) On the grid, draw the image of

- (i) shape *A* after a translation by the vector  $\begin{pmatrix} -5 \\ -6 \end{pmatrix}$ . [2]

- (ii) shape *A* after an enlargement by scale factor 3, centre  $(1, 4)$ . [2]

## Examiner comment

- (a) Candidates should be aware that a single transformation is required in this part. A combination of transformations will not be awarded marks. The full description requires the transformation to be correctly identified as a rotation, its angle of rotation stated and the centre of rotation stated. Part marks are awarded for each correct statement.
- (b) (i) The image of shape A should be drawn accurately on the diagram with care taken that its position is 5 squares to the left and 6 squares down from the position of shape A. The shape should be drawn with ruled lines. A part mark of B1 is awarded if a translation is drawn with either one of the directions correct.
- (b) (ii) The image of shape A should be drawn with ruled lines accurately on the diagram. Care should be taken to ensure the position of the image is 3 times the distance from the centre of enlargement as shape A and that every line on the image is 3 times the length of the corresponding line on shape A. A part mark of B1 is awarded if the image is drawn the correct size but in the wrong position on the grid.

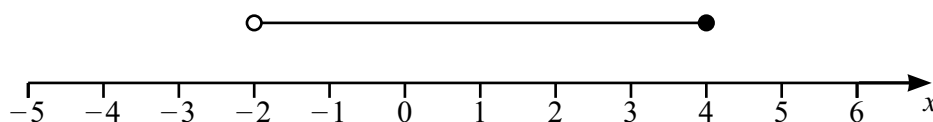
## Common errors and general guidance for candidates

- When describing a transformation only one of rotation, reflection, translation or enlargement should be stated, whichever is appropriate.
- Incorrect descriptions such as 'mirror image', 'flip', 'turn', 'translocation', 'bigger by ...' or 'dilation' are not awarded marks.
- When describing a reflection, the equation of the line of reflection must be given. When describing a translation, the translation vector (without a horizontal 'fraction' line) must be given. When describing an enlargement, the scale factor and the coordinates of the centre of enlargement must be given.
- Candidates may find it helpful to use tracing paper in transformation questions.

## Question 20(b)

### Specimen answer

(b) Write an inequality, in terms of  $x$ , to represent the interval shown on this number line.



$$-2 < x \leq 4$$

..... [2]

### Examiner comment

Candidates are required to understand the notation for writing inequalities. Open circles represent strict inequalities ( $<$  or  $>$ ) and closed circles represent inclusive inequalities ( $\leq$  or  $\geq$ ). The region on the number line between the open circle above  $-2$  and the closed circle above  $4$  means  $x$  can be all values greater than  $-2$  and less than or equal to  $4$  and is written as  $-2 < x \leq 4$ . A part mark of B1 is awarded for either  $x > -2$  or  $x \leq 4$ .

### Common errors and general guidance for candidates

- Candidates need to take care they write the correct symbol  $<$ ,  $>$ ,  $\leq$  or  $\geq$  in the statement.
- The answer could be written as two separate inequalities  $x > -2$  and  $x \leq 4$  but it is usual good practice to write a single statement.
- Candidates should always write the smaller number on the left-hand side of the statement and the larger number on the right-hand side of the statement so  $-2 < x \leq 4$  is the usual good practice rather than  $4 \geq x > -2$ .

## Question 21

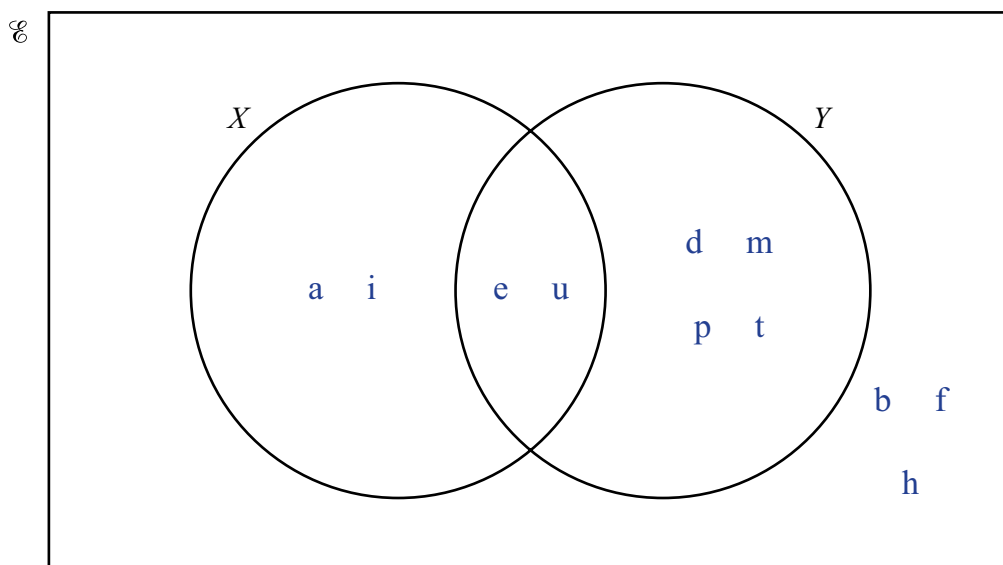
### Specimen answer

21  $\mathcal{E} = \{a, b, d, e, f, h, i, m, p, t, u\}$

$X = \{a, e, i, u\}$

$Y = \{d, e, m, p, t, u\}$

(a) Use this information to complete the Venn diagram.



[2]

(b) List the elements of  $X \cap Y$ .

..... e, u ..... [1]

(c) Find  $n(X')$ .

The elements not in set X are d, m, p, t, b, f, h so there are 7

..... 7 ..... [1]

## Examiner comment

- (a) Candidates need to work systematically, writing each element in its correct position in the Venn diagram. It is advisable that they carry out checks to ensure errors are not made. In particular, candidates can check the elements common to sets  $X$  and  $Y$  are written in the overlapping section on the diagram, and the elements in the Universal set that are not in sets  $X$  and  $Y$  are written outside the circles. A final check that all 11 different elements from the Universal set appear once in the Venn diagram is recommended. There is a part mark of B1 available if only 8 or more elements are correctly placed.
- (b) Understanding of the intersection ( $\cap$ ) notation is required. This is a follow through mark from their  $X \cap Y$ .
- (c) Understanding of the notation  $n(X')$  is required. This is a follow through mark from their diagram.

## Common errors and general guidance for candidates

- Common errors in this type of question are:  
writing the same element in more than one place on the Venn diagram,  
randomly omitting elements and, in particular, omitting elements in the Universal set that are not in the subsets  $X$  and  $Y$ ,  
writing all the elements from  $X$  in the section for  $X$  only and writing all the elements from  $Y$  in the section for  $Y$  only. The intersection is left blank.
- There is often confusion between the meaning of the symbols  $\cap$  and  $\cup$ .
- There is often confusion between the meaning of the notation  $n(X)$  and  $n(X')$ .
- There is often confusion between  $n(X)$  and listing the elements of set  $X$ , with many listing the elements rather than stating how many there.

## Question 23

### Specimen answer

23 Solve the simultaneous equations.

$$\begin{aligned} 3x - 5y &= 22 \\ 7x + 10y &= 8 \end{aligned}$$

$$\begin{aligned} 2 \times \text{equation 1: } & 6x - 10y = 44 \\ & 7x + 10y = 8 \end{aligned}$$

$$\begin{aligned} \text{Add:} & & 13x &= 52 \\ & & x &= \frac{52}{13} = 4 \end{aligned}$$

Substitute  $x = 4$  in equation 1:

$$\begin{aligned} 3 \times 4 - 5y &= 22 \\ 12 - 5y &= 22 \\ -5y &= 22 - 12 = 10 \\ y &= \frac{10}{-5} = -2 \end{aligned}$$

OR

$$\begin{aligned} 7 \times \text{equation 1: } & 21x - 35y = 154 \\ 3 \times \text{equation 2: } & 21x + 30y = 24 \end{aligned}$$

$$\begin{aligned} \text{Subtract:} & & -65y &= 130 \\ & & y &= \frac{130}{-65} = -2 \end{aligned}$$

Substitute  $y = -2$  in equation 1:

$$\begin{aligned} 3x - 5 \times -2 &= 22 \\ 3x + 10 &= 22 \\ 3x &= 22 - 10 = 12 \\ x &= \frac{12}{3} = 4 \end{aligned}$$



OR

From equation 1:  $3x = 22 + 5y$ 

$$x = \left( \frac{22 + 5y}{3} \right)$$

Substitute into equation 2:

$$7\left(\frac{22 + 5y}{3}\right) + 10y = 8$$

Multiply by 3:  $7(22 + 5y) + 30y = 24$ 

$$154 + 35y + 30y = 24$$

$$154 + 65y = 24$$

$$65y = 24 - 154 = -130$$

$$y = \frac{130}{-65} = -2$$

Substitute  $y = -2$  in equation 1: see above

$$x = \dots\dots\dots \frac{4}{\dots\dots\dots}$$

$$y = \dots\dots\dots \frac{-2}{\dots\dots\dots}$$

[3]

## Examiner comment

One of the standard algebraic methods of solving simultaneous equations is expected and some are shown here. It is suggested that candidates take care to consider which approach is the most efficient and best suited to the equations given. Candidates generally make fewer errors when adding equations rather than subtracting, especially when double negative signs are involved. In this example the first method shown is recommended; the equations are added to eliminate the  $y$  variable and only one equation needs to be multiplied to make the coefficients of the  $y$  terms equal.

Candidates should not use Trial and Improvement methods. Candidates should show their working clearly. A Method mark is available for a correct method to eliminate either  $x$  or  $y$ . If the method mark has not been awarded there is a Special Case mark for a pair of values for  $x$  and  $y$  that satisfy one of the given equations.

## Common errors and general guidance for candidates

- Arithmetic slips are common when multiplying equations by a number, and also when adding or subtracting to eliminate a variable. Care needs to be taken to avoid these.
- Candidates often forget to multiply all the terms in an equation when making the coefficients of terms equal.
- When eliminating variables candidates often combine addition and subtraction of terms resulting in an incorrect equation.

For further information about common mistakes made by candidates, please refer to the examiner reports which are published after the first exam series in 2025 on the School Support Hub at **[www.cambridgeinternational.org/support](http://www.cambridgeinternational.org/support)**

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