CARIBBEAN EXAMINATIONS COUNCIL

CSEC® MATHEMATICS

Subject Report

May-June 2025

CARIBBEAN EXAMINATIONS COUNCIL

REPORT ON CANDIDATES' WORK IN THE CARIBBEAN SECONDARY EDUCATION CERTIFICATE® EXAMINATION

MAY-JUNE 2025

MATHEMATICS
GENERAL PROFICIENCY

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INTRODUCTION

This guide has been compiled using candidates' responses to the 2025 May-June CSEC Mathematics examination. The general proficiency Mathematics examination is offered twice annually, in January and May–June. While the CSEC Mathematics syllabus remained unchanged for 2025, new items were introduced in the examination.

In May–June 2025, approximately 69 241 candidates sat the examination, representing a decrease of 9 897 candidates when compared with 2024.

The examination consisted of four papers.

- Paper 01 — Multiple choice
- Paper 02 — Structured answer
- Paper 031 — School-based Assessment (SBA)
- Paper 032 — Alternative to the SBA

Overall, candidates' performance remained unsatisfactory but was consistent with previous years. The mean score of 76.05 (38.02 per cent) was comparable with 76.71 (38.35 per cent) in 2024 and 76.22 (38.11 per cent) in 2022.

The percentage of candidates awarded Grades I–III in 2025 was 36.11 per cent, compared with 36.33 per cent in 2024 and 36.88 per cent in 2022.

PAPER 01 — MULTIPLE CHOICE

This was an objective-type paper consisting of 60 multiple choice items. The paper was designed to assess candidates' knowledge and understanding of the syllabus content. The items drawn from all sections of the syllabus.

In 2025, the mean score was 29.97 out of 60 marks, which is equivalent to 49.96 per cent. The standard deviation was 11.55.

PAPER 02 — STRUCTURED ESSAY

This was a problem-solving paper which consisted of two sections. Section I comprised seven compulsory questions worth a total of 64 marks, while Section II comprised three compulsory questions. The paper assessed the following topics.

- Number Theory
- Consumer Arithmetic and Computation
- Measurement
- Statistics
- Algebra
- Relations, Functions and Graphs
- Investigation (the investigation question may be set on any combination of objectives in the syllabus)
- Geometry and Trigonometry
- Vectors and Matrices

There was one question per topic. The mean score was 17.81 out of 100 marks and the standard deviation 18.57.

Question 1

Part (a)

This part assessed candidates' ability to evaluate numerical expressions accurately using a calculator where appropriate and to present answers in exact form. Most candidates were able to use a calculator to find the square of the fraction and correctly obtain the solution for Part (a) (i). However, some candidates subtracted seven instead of adding five to the squared fraction and consequently earned no marks.

Candidates' performance on Part (a) (ii) was mixed. While some candidates correctly followed the order of operations and obtained full marks, many of them failed to apply the correct sequence after completing the multiplication within the brackets, resulting in no marks being awarded. A few candidates applied the correct order of operations but made a mistake in their calculations and hence scored only one mark.

Part (b)

In this part, candidates were given information about Maranda's monthly earnings and the allocation of her income. In Part (b) (i) they were required to determine the percentage of her salary that was saved. This subpart was poorly done and so only a few candidates earned the one mark allocated. Many candidates calculated the amount saved rather than the percentage and among those who attempted the percentage calculation, errors in approximation were common.

In Part (b) (ii), candidates were also required to calculate the amount spent on personal items by dividing the relevant portion of Maranda’s earnings in a given ratio. Many candidates misinterpreted this requirement and calculated $\frac{4}{12}$ of $8316 instead of correctly finding $\frac{4}{12}$ of $\frac{4}{7}$ of $8316.

Candidates were then required to show that Maranda’s annual savings amounted to $42 768 in Part (b) (iii). Many candidates incorrectly divided $42 768 by 12 to obtain $3 564 and then multiplied by 12, which did not constitute proof and therefore they earned no marks. Other candidates multiplied $3 564 by 12 without demonstrating how $3 564 was obtained as the monthly savings, either in this subpart or earlier, and likewise received no marks.

Part (b) (iv) was poorly done. Candidates were required to calculate the total compound interest earned over two years at a given rate. Many of them were unable to correctly substitute values into the compound interest formula. Some candidates who substituted correctly failed to subtract the principal from the accumulated amount and therefore earned only one mark. Other candidates incorrectly used the simple interest formula and as a result, they earned no marks.

Question 2

Part (a)

Candidates were required to factorize given algebraic expressions completely. Overall, candidates' performance on Part (a) (i) was poor. Many candidates were unable to correctly substitute values into the given formula. Some candidates who carried out the substitution correctly failed to subtract the principal from the accumulated amount and therefore earned only one mark. Others incorrectly applied the simple interest method, which resulted in no marks being awarded.

Candidates' performance on Part (a) (ii) was stronger. Many candidates successfully factorized the expression by identifying the correct factors. However, weaker candidates frequently used an incorrect sign within the brackets, were unable to identify the appropriate factors or did not attempt the question.

Part (b)

Candidates were required to solve a linear equation involving fractions and division and to express the value of n correctly. This part was the most poorly done. Although some candidates arrived at the correct value for n, many of them used mathematically incorrect procedures and therefore no marks were awarded. A few candidates were able to simplify the equation correctly; however, they were unable to apply the laws of indices to complete the solution accurately. Some candidates used a trial-and-error method and where this method was used correctly and clearly executed, the available mark was awarded.

Part (c)

Candidates were given a trapezium with sides expressed in terms of variables and a stated area. For Part (c) (i) they were required to write an algebraic expression for the area in terms of p and q. Most candidates were able to correctly identify the appropriate expression for the area of the trapezium. Some candidates gave an equation instead of an expression; however, they were not penalized for doing so. Others divided the trapezium into a rectangle and a triangle rather than using the standard formula for the area of a trapezium. Where this was done accurately, candidates were awarded full marks.

Using a given relationship between the variables, candidates were then required to determine the value of p. Many candidates successfully equated their expression to 750 and correctly substituted for q. However, several candidates were unable to obtain the correct value of p because the p^2 term was omitted during simplification of the equation.

Question 3

Part (a)

Many candidates were unable to construct the required triangle accurately. They were expected to use a ruler, pencil and pair of compasses to construct a triangle given two sides and the included angle. Although many candidates correctly drew the two given sides, the 60° angle was often measured using a protractor instead of being constructed, which did not meet the requirements of the task. In addition, some candidates included a 90° angle or produced a right-angled triangle. These errors suggested that several candidates did not possess or properly use the required construction tools.

Part (b)

This part assessed candidates' understanding of geometric transformations, including translation, rotation and the ability to describe a transformation fully and accurately.

Candidates were required to analyse the grid provided and describe fully the single transformation that mapped Quadrilateral R onto Quadrilateral S in Part (b) (i). Many candidates were unable to describe the transformation completely. While several candidates included two of the required elements, identifying the centre of enlargement proved to be the most challenging aspect. Some candidates correctly indicated the centre on the diagram but recorded it inaccurately in their written response; for example, they marked (3, 7) on the diagram but wrote (4, 7), (7, 3), or simply 7.

Candidates were also required to draw and label the images of Quadrilateral R after a given translation and a rotation of 180° about the origin. Candidates' performance on the translation task in Part (b) (ii) was generally strong and was the most accurately completed part. However, for the rotation, most candidates who attempted Part (b) (iii) earned at least one mark for identifying the correct orientation. Only a few candidates who had a stronger understanding were able to secure both marks.

Question 4

Part (a)

Candidates were given the graph of a straight line, PQ. In Part (a) (i), many candidates were generally successful in determining the gradient of line PQ as required.

Candidates were then required to write the equation of the line in the form $y = mx + c$. Candidates'performance on Part (a) (ii) was generally good. Many candidates correctly expressed the equation of line PQ in the required form. Candidates who obtained an incorrect gradient in the previous subpart were nevertheless able to recover and determine the correct equation using their follow through gradient.

Part (b)

Candidates were given two functions. They were required to evaluate a function at a given value in Part (b) (i) and most candidates were generally successful in finding $f(-16)$. Candidates were also required to find the inverse of $g(x)$ in Part (b) (ii) and their performance on this part was generally good. However, some candidates experienced difficulty when transposing $x$and y.

For Part (b) (iii), candidates were then required to show the composition of two functions and hence solve an equation. Many of them experienced difficulty with this. While some candidates were able to substitute $g(x)$ into $f(x)$ correctly, several struggled with expanding, simplifying and factorizing the resulting expression as required in Part (b) (iii) (b). Many candidates also had difficulty solving the equation $fg(x)$ in Part (b) (iii) (b). Where attempts were made, a common error was obtaining only one value of x instead of all the required solutions.

Question 5

Candidates were given a frequency table of test scores and were required to use it as a reference to respond to Parts (a) and (b).

Part (a)

This part assessed candidates' ability to interpret a frequency table and complete the cumulative frequency column. Overall, this part was well done and many candidates found it straightforward. However, a few candidates made calculation errors, resulting in one of the two cumulative frequency values being incorrect.

Part (b)

Candidates were required to use the information in the table to determine measures of central tendency and spread the range, modal mark and median mark.

For Part (b) (i), several candidates gave incorrect responses. Some candidates stated the range as '1–10', while others gave '8–1', incorrectly using the largest and smallest frequencies instead of the data values. Additional incorrect responses included '1–30' and calculations such as '30 − 3 = 27'.

For Part (b) (ii), the mode was generally well known. However, a common error was the inability to distinguish between the mode and the median. Some candidates stated the modal frequency instead of the modal value. Others listed the frequencies and identified the number that appeared most often in the frequency list, which coincidentally produced the correct answer. For example, the list 3, 4, 8, 3, 1, 6, 4 was used to justify *3* as the mode based on frequency repetition rather than the data values.

In Part (b) (iii), although some candidates recognized that the median is the middle value, they incorrectly ordered the frequencies and no marks were awarded. For example, ordering 1, 3, 3, 4, 5, 6, 8 led candidates to identify '4' as the median using incorrect working. Other errors included using the mode or the mean as the median. Some candidates ordered the marks and stated 5 as the median, while others attempted to use a formula by substituting n = 30 (the total frequency), obtaining 15.5 and stopping at that point.

In Part (b) (iv), a common error was calculating the sum of the product of frequency and cumulative frequency, resulting in an incorrect total such as '530'. That is, candidates multiplied the values in the final two columns of the table. Other incorrect approaches included adding the frequencies and dividing by 7, or adding the cumulative frequencies and dividing by 30, which led to unreasonable results, such as a mean of 210. Some candidates also added the marks and divided by 7 to obtain the mean.

Part (c)

Candidates were given a two-way table showing the distribution of student performance by gender. They were required to calculate the probability of selecting a female student who failed the test and the conditional probability that a randomly chosen male student passed the test, for Parts (c) (i) and (ii) respectively.-way table showing the distribution of student performance by gender.

For Part (c) (i), many candidates were able to identify the value 13; however, several failed to express it as a probability. Some candidates used an incorrect denominator, such as 21, while others did not recall that a probability must be expressed as a number between 0 and 1 inclusive.

Similarly, in Part (c) (ii), candidates were able to identify the value 4 but again failed to represent it as a probability. As in the previous part, some candidates demonstrated a lack of understanding that probability values must lie between 0 and 1 inclusive.

Question 6

In this question, candidates were given a composite diagram consisting of a rectangle and a semi-circle.

Part (a)

In Part (a) (i), candidates were required to determine the value of an angle in an isosceles triangle formed within the diagram. Most candidates correctly applied the properties of an isosceles triangle to find the value of angle OPQ.

Candidates were then required to calculate the length of a side of the rectangle using the given dimensions and appropriate geometric relationships in Part (a) (ii). Those who were successful used a variety of methods, including trigonometric ratios, Pythagoras' theorem, or applying the cosine rule to determine the length of OR.

Part (b)

Candidates were required to calculate the area of the shaded region using the given dimensions and the stated value of π. Many candidates were unable to correctly calculate the area of the semi-circle and the triangle and then total them to find the area of the shaded region. Common errors included finding the area of the entire circle instead of the semi-circle or calculating the area of a sector rather than the required region. Although some candidates obtained an incorrect radius from Part (a) (ii), they were still able to earn follow-through marks when their subsequent calculations were carried out correctly using their derived values.

Part (c)

Performance on this part was poor, as many candidates were unable to correctly determine the perimeter of the cross-section $PMQROS$. Some candidates who earned a mark did so by correctly adding the three sides of the rectangle to the arc length of a circle, using 40° as the sector angle or by correctly using twice the value of OR as the radius of the semi-circle.

Overall, the question was poorly done, with approximately 64 per cent of candidates scoring zero or providing no response, 16 per cent scoring one mark and about 2 per cent achieving full marks, based on a sample of 7 000 scripts.

Question 7

Candidates were given a sequence of figures formed from regular pentagons.

Part (a)

In this part, candidates were required to complete the diagram of Figure 4 by extending the pattern using sticks of unit length and by marking the vertices with dots. Many candidates demonstrated a good understanding of sequencing and patterns and were awarded full marks. Weaker candidates were able to draw the pentagon on the right-hand side; however, the orientation was incorrect. In these cases, candidates were awarded partial marks.

Part (b)

Candidates were required to examine the numerical patterns associated with a sequence of figures and complete a table by determining the number of sticks and dots required to form each of the specified figures. This involved completing missing rows, identifying values for a given figure number and expressing the pattern for the n^{th} figure.

For Part (b) (i), candidates were able to correctly obtain both values, 81 and 62, and were awarded full marks. Similarly, in Part (b) (ii), candidates correctly identified both values, 42 and 128, and were again awarded full marks.

For Part (b) (iii), weaker candidates were able to obtain one of the two required expressions; in this case, $4n + 1$ was accepted and partial credit was awarded for providing this expression. Candidates who correctly obtained both expressions, $4n + 1$ and $3n + 2$, in terms of n, were awarded full marks. Alternative equivalent expressions were also accepted, for example, $[5 + (n - 1) \times 4]$ for the number of sticks and $[5 + (n - 1) \times 3]$ for the number of dots. Candidates were awarded full marks for providing these expressions.

Part (c)

Candidates were required to write an equation relating the number of sticks, S, the number of dots, D, and the figure number, n. Weaker candidates equated the number of sticks to the number of dots, for example, '$4n + 1 = 3n + 2$', which was incorrect; therefore, no marks were awarded. However, most candidates correctly simplified the relationship as $D - S = (n - 1)$ and were awarded full marks. Overall, this part was poorly done.

Question 8

Part (a)

Candidates were given the graph of a quadratic function and were required to use the graph to identify key features of the function. These included stating the roots, the coordinates of the y-intercept, the minimum value of the function and the equation of the axis of symmetry.

For Part (a) (i) (a), candidates' performance was generally good. Many candidates correctly identified the roots as the points of intersection of the parabola with the x-axis and stated the x-values as the roots. However, a common error was giving the coordinates of the points, for example, (−2,0) and (1,0) instead of the x-values only. Some candidates also incorrectly gave both roots as a single coordinate, such as (−2,1).

In Part (a) (i) (b), most candidates who attempted the question attained full marks. Candidates correctly identified the y-intercept as the point where the parabola intersects the y-axis. A frequent error was stating only the y-value instead of the full coordinate.

Candidates' performance on Part (a) (i) (c) was also strong. Candidates correctly identified the minimum value of the function as the y-value of the minimum point of the parabola. Errors included finding the minimum value algebraically instead of using the graph or giving the coordinates of the minimum point rather than the minimum value. Some candidates incorrectly stated the minimum value as '$x = -\frac{9}{4}$' or '$x = -2.25$'.

For Part (a) (i) (d), many candidates correctly stated the equation of the axis of symmetry as the vertical line passing through the minimum point. However, a common misconception was giving only a numerical value such as '$-\frac{1}{2}$' or '-0.5' rather than an equation. Some candidates incorrectly wrote equations such as '$y = -0.5$' or '$h = -0.5$'. A few candidates used algebraic methods, including completing the square, to determine the axis of symmetry.

Part (b)

In Part (b) (i), candidates were required to draw and correctly label the straight line $y = 2x + 4$ on the same axes as the quadratic graph. Strong candidates drew a straight line with a positive gradient (sloping upwards from left to right), passing through the points (–2,0) and (0,4). However, many candidates did not attempt this part.

For Part (b) (ii) candidates were then required to use the points of intersection of the two graphs to determine the solutions of the given simultaneous equations. Most candidates performed well, some candidates recognized that the solutions were the coordinates (both $x$and y) of the points of intersection. Common errors included giving only the x-coordinates as the solutions or identifying only one of the two solutions. Some candidates attempted to solve the problem algebraically instead. It was evident that many candidates did not fully understand what was meant by "determine the solutions", as some correctly drew the straight line but did not proceed to complete this part.

Part (c)

Candidates were given a velocity–time graph and were required to determine the initial acceleration of the car in Part (c) (i). This part was well done. Most candidates identified the initial acceleration by calculating the gradient of the first stage of the graph. However, many candidates experienced difficulty interpreting the scale correctly and some were unable to accurately identify the first stage of the motion. Many candidates were unaware that acceleration is represented by the gradient of a speed-time graph

Candidates were also asked to calculate the distance between the two towns by finding the area under the graph in Part (c) (ii). Candidates performed well and most of them correctly determined the distance by calculating the area under the graph, using methods such as the

- area of a trapezium
- area of two triangles and a rectangle
- area of a trapezium and a triangle.

Common errors included difficulty interpreting the scale and a lack of awareness that distance can be calculated from the area under a velocity–time graph. Some candidates also used an incorrect formula for the gradient, calculating $\frac{x_2-x_1}{y_2-y_1}$ instead of the correct expression $\frac{y_2-y_1}{x_2-x_1}$.

Question 9

Part (a)

Candidates were given a description and sketch of a ship's journey involving distances and bearings. For Part (a) (i), candidates were required to insert the given bearings on the diagram. This subpart had the highest number of correct responses, as many candidates were able to accurately insert both bearings. The correct answers were 042° and 130°.

In Part (a) (ii), candidates had to calculate the distance between Points A and C. More candidates than usual recognized that the cosine rule was required to find the distance between A and C; however, many of them substituted the incorrect angle.

Part (a) (iii) required candidates to determine the bearing of Point A from Point C. Few candidates were able to accurately apply the sine rule to find the bearing. Even fewer candidates attempted to use the cosine rule and most candidates who attempted to do so were unsuccessful.

Part (b)

A diagram of a circle with a tangent and a diameter was provided and candidates were required to calculate specified angles using properties of circles, tangents and straight lines, giving reasons to support their answers.

Many candidates were able to find the angle PON in Part (b) (i). Although few candidates accurately recalled the exact theorem, most of them included the key elements of the theorem in their explanations, namely reference to the radius or diameter, the tangent and the right angle formed.

Fewer candidates were able to determine angle PLM in Part (b) (ii) compared with Part (b) (iii). Most candidates who attempted this question used properties of isosceles triangles and the right angle at the circumference subtended by the diameter. However, the more direct approach—that the angle at the centre is twice the angle at the circumference, was rarely applied.

Candidates' performance Part (b) (iii) was weak. Few candidates were able to correctly find angle PMN and only a few candidates recalled the alternate segment theorem. Most candidates attempted to solve the problem using isosceles triangles and the right angle formed where the radius meets the tangent.

Question 10

Part (a)

Candidates were given a parallelogram with sides expressed as vectors and were required to determine vector expressions in terms of $r$and s. In Part (a) (i) (a), candidates were required to find the vector $\overrightarrow{PL}$. Most candidates who attempted this part were able to correctly express $\overrightarrow{PL} = -r + s$ or $s - r$.

In Part (a) (i) (b), candidates were asked to find the vector $\overrightarrow{OM}$, given that a point divided a line segment in a specified ratio. Many candidates correctly identified the route from O to M and expressions such as $\overrightarrow{OM} = \overrightarrow{OP} + \overrightarrow{PM}$ OR $\overrightarrow{OM} = \overrightarrow{OL} + \overrightarrow{LM}$ were frequently seen. However, in several cases, candidates were unable to determine correct expressions for $\overrightarrow{PM}$ or $\overrightarrow{LM}$.

In Part (a) (ii), candidates had to prove that the points O, M and T were collinear using vector relationships. Approximately 40 per cent of candidates who attempted this part demonstrated that they had an understanding of how to establish collinearity using vectors. Candidates who used the relationship between $\overrightarrow{OT}$and $\overrightarrow{OM}$were generally successful. However, those who attempted to use relationships involving $\overrightarrow{OT}$and $\overrightarrow{MT}$ or $\overrightarrow{OM}$and $\overrightarrow{MT}$ experienced difficulty due to errors in simplifying fractional expressions.

Part (b)

In this part, candidates were given three matrices. For Part (b) (i) they had to calculate the matrix $AB + C$. Only a few candidates were able to correctly perform the matrix product AB and then add C. A few candidates stated that the matrix product could not be found, while most of them demonstrated that they had little understanding of how to carry out matrix multiplication.

In Part (b) (ii), candidates were required to find the inverse of the matrix A. Most candidates who attempted this part knew that the inverse is obtained by multiplying the adjoint of the matrix by the reciprocal of the determinant. However, many candidates calculated either the adjoint or the determinant incorrectly or made errors calculating both. A few candidates successfully calculated the determinant and used it together with the adjoint to obtain the correct inverse.

In Part (b) (iii), candidates were required to write down the 2×2 identity matrix obtained from the product AA^{-1}. A few candidates correctly identified the 2 × 2 matrix representing $A^{-1}A$. However, most candidates attempted to multiply their inverse from Part (b) (ii) by the matrix A, rather than recognizing the required result.

Overall, the performance of candidates was poor. Approximately 65 per cent of candidates scored zero marks or provided no response, five per cent scored one mark only and about 0.5 per cent of candidates achieved full marks, based on a sample of 8000 scripts.

PAPER 032 — ALTERNATIVE TO THE SCHOOL-BASED ASSESSMENT (SBA)

Paper 032, the Alternative to the School-Based Assessment (SBA), is intended for private candidates and serves as an alternative to Paper 031. The paper comprises two compulsory questions and the topics tested may be drawn from any section or a combination of sections of the syllabus.

Overall, the mean score was 10.20 out of 40 marks (25.50 per cent) and the standard deviation 7.54.

Question 1

Candidates were given raw data showing the number of text messages sent by students in one day. They were required to complete a cumulative frequency table, calculate the mean number of text messages sent, identify the modal class and represent the data graphically using a histogram.

Part (a)

Approximately 60 per cent of candidates were able to accurately complete the frequency table and were awarded full marks. Some candidates completed the cumulative frequency column correctly but experienced challenges when completing the frequency column. The expected responses are shown in the table below.

Number of Text Messages	**Frequency**	**Cumulative Frequency**
0 – 9	16	**16**
10 – 19	**18**	34
20 – 29	**10**	44
30 – 39	6	**50**

Part (b)

Approximately 75 per cent of candidates successfully calculated the mean number of text messages and earned the two marks allocated. However, some candidates lost marks due to errors in calculating the total frequency or by attempting to use $f(x)$ without first determining and using the class midpoints. Some candidates correctly multiplied the frequency by the corresponding values, found the total and divided by the total frequency. The expected calculation for the mean number of text messages was

Total number of text messages/No. of students = 750/ 50 = 15.

Alternatively, another correct method used by candidates was using class midpoints. Candidates were credited for correctly finding the midpoints, multiplying by the corresponding frequencies, summing the products and dividing by 50, as shown below.

Number of Text Messages	**Frequency (*f*)**	**Midpoint (*x*)**	***fx***
0 – 9	**16**	4.5	72
10 – 19	**18**	14.5	261
20 – 29	**10**	24.5	245
30 – 39	**6**	34.5	207
Total	**50**		785

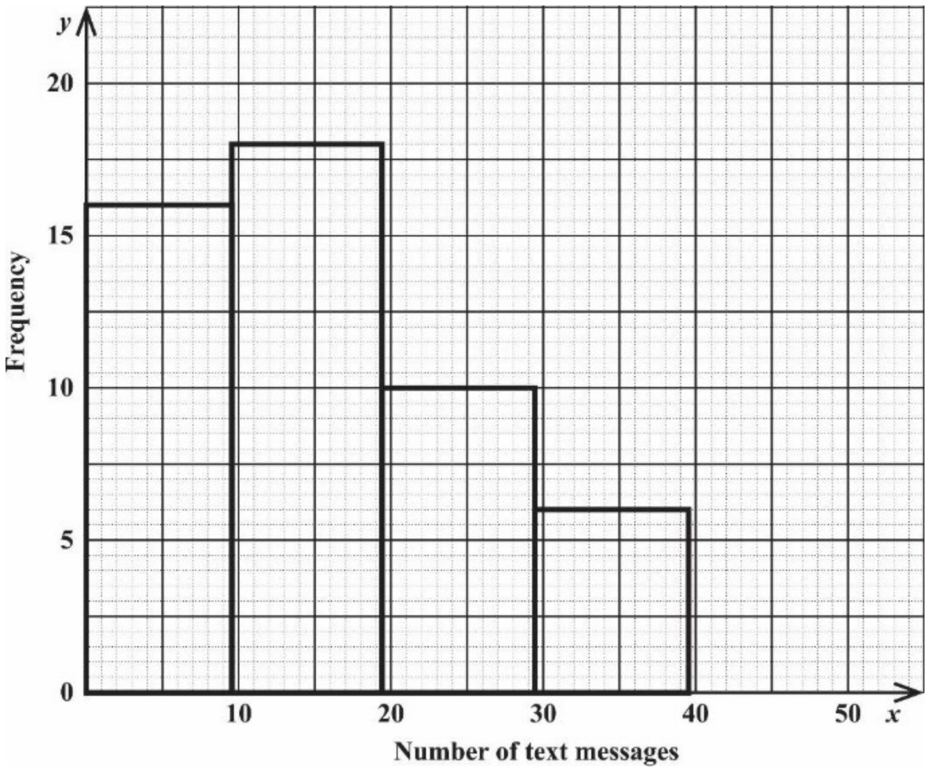
$$\text{Mean} = \frac{\sum fx}{\sum f} = 785/50 = 15.70$$

Part (c)

Approximately 95 per cent of candidates achieved full marks for correctly identifying the modal class as *10–19*. However, some candidates confused the mode with the modal class, resulting in such candidates losing marks.

Part (d)

Most candidates received partial marks (two marks) for drawing two correct bars and joining the bars. However, approximately 60 per cent of candidates lost marks for drawing four bars incorrectly. Most candidates did not use class boundaries when constructing the histogram. Additionally, some candidates drew a line graph instead of a histogram. The expected graph is shown below. Marks were awarded for drawing the correct bars, joining the bars and using appropriate class boundaries.



y
20
15
10
5
0
Frequency
10
20
30
40
50
x
Number of text messages

Question 2

Part (a)

Candidates were given information about an investment earning simple interest and were required to determine the equivalent compound interest rate and to calculate the total amount accumulated after a specified period using the compound interest formula. This part could be answered in two different ways to earn full marks. The two methods are outlined below.

Method 1 — Converting to an equivalent compound interest rate

$$R = \frac{60\%}{6\ yrs} = 10\%\ p.a.$$

OR

Method 2: Year-by-year calculation

First year:

Interest = 10/ 100 × $8000

= $800

Second year:

Principal = $8000 + $800

= $8800

Interest = 10/ 100 × $8800

= $880

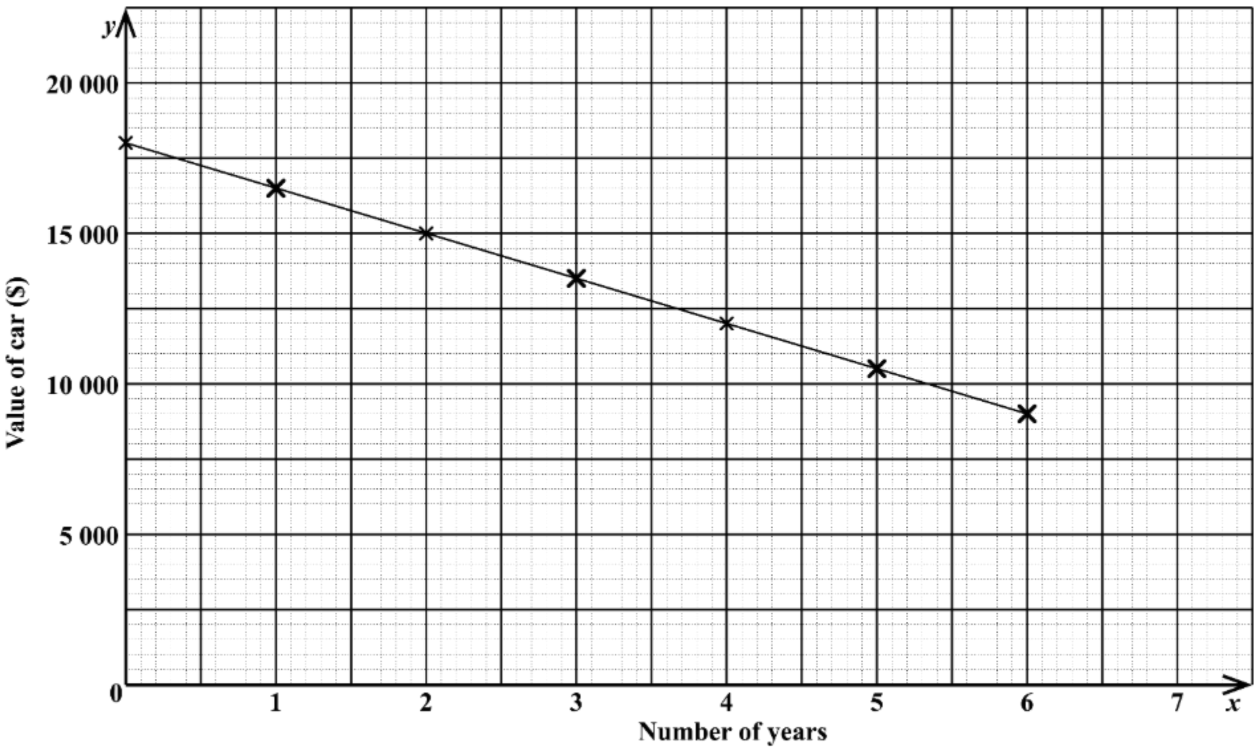
End of year 2 principal = $8800 + $880

= $9680

Part (b)

Candidates were given a table showing the depreciation in the value of a car over a six-year period and were required to use the information provided to answer the questions that followed.

For Part (b) (i) candidates had to plot the remaining data points on the given grid and draw a straight line to represent the relationship between the value of the car and its age in years. The expected graph is shown below.



Part (b) (ii) required candidates to determine the gradient of the straight-line graph. The expected response was as follows.

Gradient of graph

Considering the points (4, 12000) and (6, 9000)

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$m = \frac{9000 - 12000}{6 - 4}$$

$$m = \frac{-3000}{2}$$

$m = -1500$

In Part (b) (iii), candidates were required to explain the meaning of the gradient in relation to the depreciation of the car's value over time. Most candidates were able to accurately state that the gradient represents the amount by which the car depreciates each year.

Part (b) (iv) required candidates to form a linear equation representing the relationship between the age of the car and its value.

Equation of the line

$y = -1500x + 18000$

In Part (b) (v), candidates were required to interpret the y-intercept and explain its significance in relation to the value of the car.

Meaning of y-intercept

The *y*-intercept of the graph gives the original/initial cost of the car.