

MATH CP

PAPER 1

2025 – 2026

First Term Examination

S.4 MATHEMATICS Compulsory Part

PAPER 1

Question-Answer Book

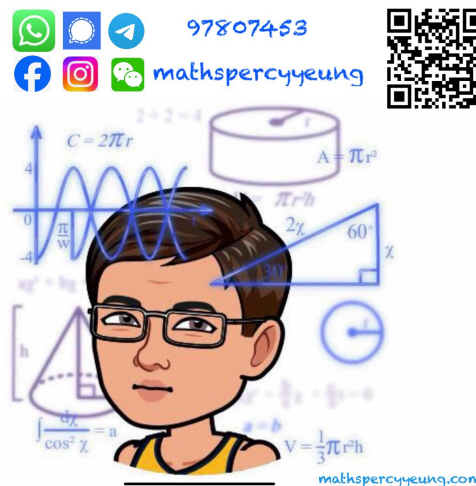
Time allowed: 1 hours 45 minutes

Full Marks: 87

This paper must be answered in English

INSTRUCTIONS

- (1) Write your name, class and class number in the spaces provided.
- (2) This paper consists of THREE sections: A(1), A(2) and B.
- (3) Attempt ALL questions in this paper. Write your answers in the spaces provided in this Question-Answer Book. Do not write in the margins. Answers written in the margins will not be marked.
- (4) Graph paper and supplementary answer sheets will be supplied on request. Write your name, class and class number in the spaces provided on each sheet and fasten them with string INSIDE this book.
- (5) Unless otherwise specified, all working must be clearly shown.
- (6) Unless otherwise specified, numerical answers should be either exact or correct to 3 significant figures.
- (7) The diagrams in this paper are not necessarily drawn to scale.
- (8) Only calculators with the “H.K.E.A. APPROVED” or “H.K.E.A.A. APPROVED” label are allowed in the examination.



SECTION A(1) (35 marks)

1. Simplify $\frac{(xy^{-2})^{-4}}{x^3y^2}$ and express your answer with positive indices. (3 marks)

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2. Make x the subject of the formula $\frac{y-3x}{2}+1=3y$. (3 marks)

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2025 – 2026
First Term Examination
S.4 Mathematics Compulsory Part Paper 1

Name: _____

S.4 _____ ()

3. Factorize

(a) $4a^2 - 4ab + b^2$,

(b) $1 - 4a^2 + 4ab - b^2$.

(3 marks)

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4. The marked price of a smartwatch is \$8400. It is known that the marked price of the smartwatch is 40% above the cost.

(a) Find the cost of the smartwatch.

(b) Chris claims that there will be no loss or gain if the smartwatch is sold at a discount of 40%.

Do you agree? Explain your answer.

(4 marks)

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5. Abby and Betty shared a bag of candies. The number of candies Betty had is twice that of Abby. If Betty gives 7 candies to Abby, the number of candies Betty has is half of the number of candies Abby has. How many candies were there in the bag?

(3 marks)

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6. The weight of a watermelon is measured as 6.8 kg, correct to the nearest 0.1 kg.
- (a) Find the least possible weight of the watermelon.
- (b) Sarah cuts the watermelon equally into 8 slices. Is it possible that the weight of each slice of watermelon is measured as 844 g, correct to the nearest g? Explain your answer.

(4 marks)

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2025 – 2026
First Term Examination
S.4 Mathematics Compulsory Part Paper 1

Name: _____

S.4 _____ ()

7. Solve the equation $3x^2 - 9x + 1 = 0$. (Leave your answers in surd form if necessary.)

(2 marks)

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8. The figure shows a right-angled triangle. Find the value of x .

(2 marks)

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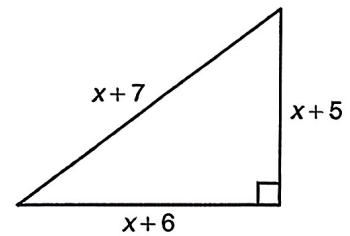
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9. $P(4, 1)$ is rotated clockwise about the origin O through 90° to the point Q .
- (a) Write down the coordinates of Q .
- (b) Find the equation of the straight line L passing through Q and the inclination of the straight line L is 45° .

(4 marks)

(The page contains faint horizontal lines suggesting writing or scanning artifacts.)

10. Let L be the straight line passing through $(2, -3)$ and $(4, -7)$.
- Find the equation of L .
 - If L intersects the x -axis at C , find the coordinates of C .

(4 marks)

[illegible]

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2025 – 2026
First Term Examination
S.4 Mathematics Compulsory Part Paper 1

Name: _____

S.4 _____ ()

11. The straight lines $L_1 : 2x + y - 1 = 0$ and $L_2 : 3x - y + 4 = 0$ are given. If the straight line L is parallel to L_1 , and the y -intercepts of L and L_2 are the same, find the equation of L .

(3 marks)

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- (a) Find the value of k . (2 marks)
- (b) Hence, find the product of the roots. (2 marks)

2025 – 2026
First Term Examination
S.4 Mathematics Compulsory Part Paper 1

Name: _____

S.4 _____ ()

13. If $(2 - 6i)(a + 3i) = 12 + 24i$, find the value of the real number a .

(4 marks)

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14. It is given that $f(x) = kx + 3$, $g(x) = x^2 - k$ and $f(4) - g(3) = 4$.

(a) Find the value of k .

(2 marks)

(b) Solve the equation $g(2x) + 2f(x) = -3$.

(3 marks)

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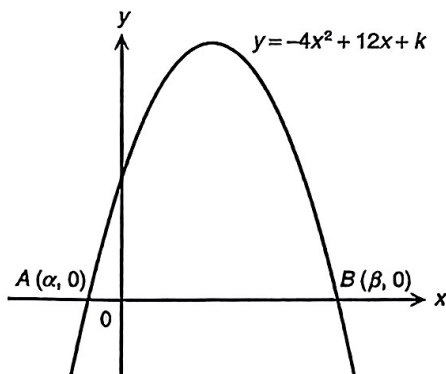
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(b) Hence, find the roots of the equation for the smallest integral value of k in (a). (2 marks)

[illegible]

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16. It is given that the graph of $y = -4x^2 + 12x + k$ cuts the x -axis at two points $A(\alpha, 0)$ and $B(\beta, 0)$. If $\frac{2}{\alpha} + \frac{2}{\beta} = -3$, find the value of k . (3 marks)



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2025 – 2026
First Term Examination
S.4 Mathematics Compulsory Part Paper 1

Name: _____

S.4 _____ ()

17. If α and β are the roots of the equation $x^2 + 3x + 5 = 0$,

(a) **without finding the values of α and β** , find the values of

(i) $\alpha^2 + \beta^2$, and

(ii) $\alpha^2 \beta^2$.

(4 marks)

(b) form the equation in x whose roots are α^2 and β^2 .

(1 mark)

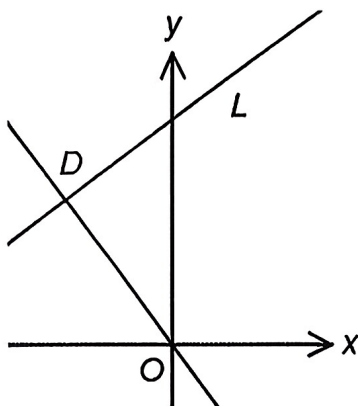
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18. In the figure, D is a point on the straight line $L : 3x - 4y + 25 = 0$ such that OD is the shortest distance from O to the line L .



- (a) Find the equation of OD . (4 marks)
- (b) Find the coordinates of D . (2 marks)

1. What is the main purpose of the study?
 2. What are the research objectives?
 3. What is the significance of the study?
 4. What is the scope of the study?
 5. What are the limitations of the study?
 6. What is the methodology used in the study?
 7. What are the results of the study?
 8. What are the conclusions of the study?
 9. What are the implications of the study?
 10. What are the recommendations of the study?

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Name: _____ S.4 _____ ()

19. (a) Express $\frac{10i^{864}-15i^{321}}{1+2i}$ in the form $a+bi$, where a and b are real numbers.

(b) If the result of $\frac{10-15i}{1+2i}(x+2i)$ is purely imaginary number, find the values of x .

(2 marks)

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20. Let $p(x) = (x+1)^2(x-a) + (x-1)(x-b)^2$, where a and b are positive integers, and $a < b$. It is given that $p(0) = -5$.

- (a) (i) Prove that $a + b^2 = 5$.
(ii) Write down the values of a and b .

(3 marks)

- (b) Let $p(x) = (x-1) \cdot f(x)$.

- (i) Find $f(x)$.
- (ii) Someone claims that the graph of $y = f(x)$ does not intersect the x -axis. Do you agree? Explain your answer.

(4 marks)

[illegible]

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2025 – 2026
First Term Examination
S.4 Mathematics Compulsory Part Paper 1

Name: _____

S.4 _____ ()

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- Show that the value of $k = 432$. (2 marks)
- Find the equation of DC . (2 marks)
- A straight line passing through A intersects the line segment DC at the point E such that $CE = AB$. Find the ratio of the area of $\triangle ADE$ to the area of $\triangle AEC$. (4 marks)

2025 – 2026
First Term Examination
S.4 Mathematics Compulsory Part Paper 1

Name: _____

S.4 _____ ()

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