Term 1 Assessment 2025 – 2026

Grade: 9

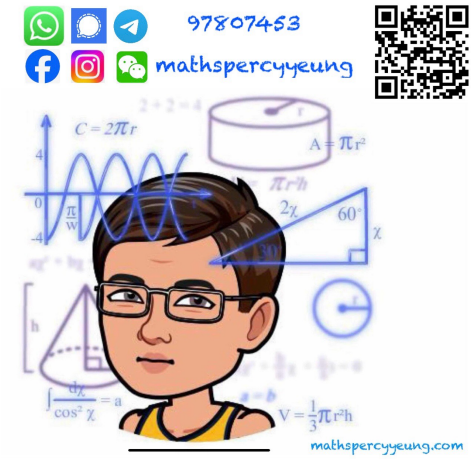
Subject: Mathematics

Paper: I

Time Allowed: 1 hour 15 minutes

Date: -5 DEC 2025

Total Marks: /70




This paper must be answered in English

**INSTRUCTIONS**

1. This paper consists of Section A and Section B.

   Section A carries 46 marks and Sections B carries 24 marks.
2. Answer all the questions.
3. Use of an HKEAA approved calculator is allowed.
4. The diagrams in this paper are not necessarily drawn to scale.
5. Write your mathematical expressions, answers and statements/conclusions in the spaces provided.
6. Unless otherwise specified, numerical answers should be either exact or correct to 3 significant figures.
7. Do your rough work in the rough worksheet provided.

| Teacher's Use Only | | |
|---|---|---|
| Question No. | Max. marks | Marks |
| Section A | | |
| 1 | 6 | |
| 2 | 4 | |
| 3 | 5 | |
| 4 | 6 | |
| 5 | 2 | |
| 6 | 5 | |
| 7 | 5 | |
| 8 | 6 | |
| 9 | 3 | |
| 10 | 4 | |
| **Sub-total** | **46** | |
| Section B | | |
| 11 | 10 | |
| 12 | 8 | |
| 13 | 6 | |
| **Sub-total** | **24** | |

**Section A (46 marks)**

1. (a) Factorize $8a^2+14ab+3b^2$. (1 mark)

(b) Factorize $-2a^2+7ab+4b^2$. (2 marks)

(c) Hence, or otherwise, factorize $8(2x+y)^2-14(-2x^2+7xy+4y^2)+3(x-4y)^2$. (3 marks)

2. (a) Factorize $a^3-64$. (1 mark)

(b) Hence, factorize $a^3-13a-12$. (3 marks)

3. The number of sheets of paper used in a company on Tuesday was 1 950, which was 30% more than that on Monday. If the number of sheets of paper used in the company increased by 45.6% from Monday to Wednesday, find

(a) the number of sheets of paper used on Wednesday; (3 marks)

(b) the percentage change in the number of sheets of paper used from Tuesday to Wednesday. (2 marks)

4. The population of a country increases at a constant rate every 10 years. It is known that the population in 2010 was 44% more than that in 1990.

(a) Find the growth rate of the population every 10 years. (3 marks)

(b) Since when will the population be more than twice the population in 2000? (3 marks)

5. Mr. Chan assesses a housing estate in terms of five areas.

| Area | Surrounding Environment | Community Facility | Apartment Layout | Age | Price |
|---|---|---|---|---|---|
| **Rating** | 70 | 80 | 60 | 60 | $x$ |
| **Weight** | 15% | 25% | 20% | 15% | 25% |

If the weighted mean rating of the housing estate is 69, find the value of $x$. (2 marks)

6. The following are the heights of the members in a team.

179 cm, 164 cm, 168 cm, 198 cm, 167 cm, 166 cm, 169 cm

The leader of the team claims that the average height of the members is 173 cm.

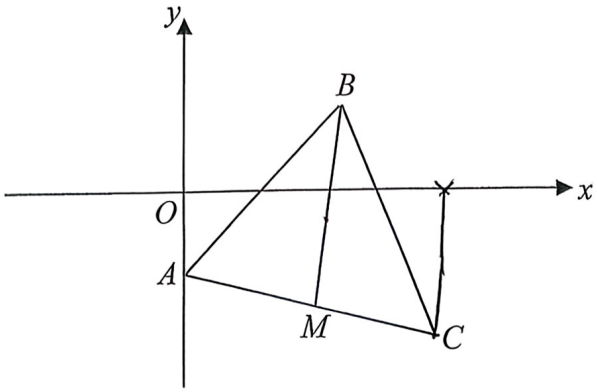
(a) Which kind of average does the leader of the team refer to? Explain your answer.

(2 marks)

(b) Do you think the average mentioned by the leader can reasonably reflect the heights of the members? Explain your answer. (2 marks)

(c) Which average can best reflect the heights of the members in the team? (1 mark)

7. In the figure, the vertices of $\Delta ABC$ are $A(0, -3)$, $B(6, 1)$ and $C(10, -5)$.

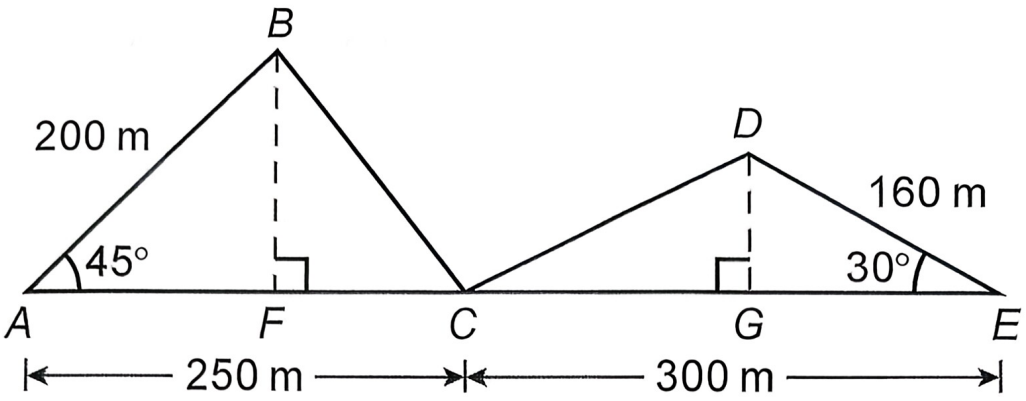



(a) If $M$ is the midpoint of $AC$, find the coordinates of $M$. (1 mark)

(b) Show that $\Delta ABC$ is an isosceles triangle. (2 marks)

(c) If a point $D$ lies on the $x$-axis such that $BM \parallel DC$, find the coordinates of $D$. (2 marks)

8. In the figure, $AB$, $BC$, $CD$ and $DE$ are four slopes. $ACE$ is a horizontal line.




(a) Find the length of $BF$ and $GE$. (Leave your answer in surd form if necessary.) (3 marks)

(b) Sam claims that $BC$ is steeper than $CD$. Do you agree? Explain briefly. (3 marks)

9. It is given that $\cos\theta = \frac{6}{7}$. Find the value of $\frac{1}{\tan\theta - \sin\theta}$ without evaluating $\theta$.

(Leave your answer in surd form and rationalize the denominator.) (3 marks)

10. Prove that $\frac{\sin^2\theta \tan(90° - \theta)}{\sin^2(90° - \theta)} \equiv \sin\theta\cos\theta(1 + \tan^2\theta)$. (4 marks)

**Section B (24 marks)**

11. *(In this question, give your answers correct to 2 decimal places. )*

Last year, Mr. Leung received a year-end bonus of $25 500 and deposited it into a 'Target Saving' account. The interest rate in the first year was 6% p.a., compounded quarterly.

(a) Find the compound interest earned at the end of the first year. (4 marks)

(b) In the following year, Mr. Leung received a year-end bonus that was 12% more than the previous year's bonus. He deposited this new bonus into the same 'Target Saving' account.

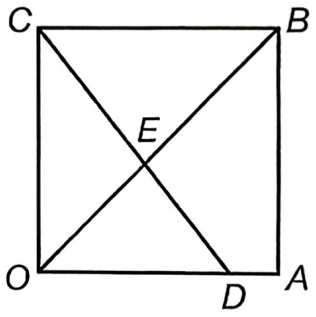
(i) Find the balance in Mr. Leung's 'Target Saving' account at the beginning of the second year. (2 marks)

(ii) Suppose he keeps all the money in the account for 2 more years. The interest rate is now 6.4% p.a., compounded half-yearly.

(1) Find the total amount in the account at the end of the two years. (2 marks)

(2) A used car curently costs $65 000 and its value depreciate 3% per year. Using the answer in (b)(ii)(1), determine whether Mr. Leung's 'Target Saving' account will have enough money at the end of those two years to buy the used car. (2 marks)

12. In the figure, $OABC$ is a square. $D$ divides $OA$ internally in the ratio $4 : 1$. $CD$ and diagonal $OB$ intersect at $E$. Let $(0, 0)$, $(5a, 0)$ and $(0, 5a)$ be the coordinates of $O$, $A$ and $C$ respectively, where $a$ is a non-zero costant.




(a) Write down the coordinates of $B$ and $D$. (1 mark)

(b) Find the coordinates of $E$. (4 marks)

(c) Hence, find $CE : ED$. (3 marks)

13. Consider the expression $x^2 + Ax + B$, where $A$ and $B$ are integers.

(a) Factorize $x^2 + Ax + B$ when $A = -25$ and $B = 150$. (1 mark)

(b) If the expression is a perfect square and $B = 100$, find all possible values of $A$ and write down the corresponding perfect squares. (3 marks)

(c) If $A = -15$ and $B$ is less than $A$, suggest a value of $B$ such that the expression $x^2 + Ax + B$ can be factorized. Hence factorize the expression. (2 marks)

**END OF PAPER**