

第十一屆全港小學數學挑戰賽(2024-2025)  
The 11<sup>th</sup> Hong Kong Primary Mathematics Challenge (2024-2025)

決賽 (二零二四年十二月七日)  
Final (7<sup>th</sup> December, 2024)

小六組                      個人項目                      試卷  
Primary 6                      Individual Event                      Question Paper

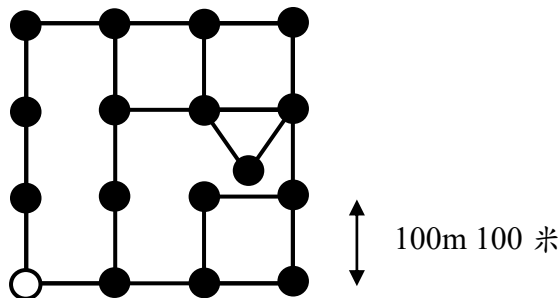
**參賽者須知 Instructions to Contestants**

1. 在比賽過程中，參賽者必須將准考證放在桌上。  
You should place your Admission Form on your desk for the whole session.
2. 於比賽期間必須關掉所有手提電話、通訊工具及其他響鬧裝置。  
During the competition, you should switch off your mobile phone and any other electronic or communication devices that can emit sound.
3. 本項目以筆試形式舉行，須於限時 45 分鐘內完成所有題目。  
Contestants should finish all questions in this 45-minutes written test.
4. 在答題紙上填寫學校名稱、參賽者姓名、參賽者編號、座位編號。  
Write your name, admission number, seat number and school name on the front cover of your answer sheet.
5. 參賽者於比賽時只准使用大會提供之草稿紙。  
You can only use the rough work sheet provided by the organizer.
6. 參賽者不可於比賽中使用計算機。  
The use of calculators is NOT allowed.
7. 每題只需把答案填寫在大會提供之答題紙上，否則不予評分。參賽者不需填寫計算步驟。  
Put your answers on the answer sheet provided, otherwise, the answers will not be marked. You are not required to show the steps in your calculations.
8. 作答時，每題的答案均須以 0 至 9999 之間的整數表示，小於 1000 的答案均須補「0」以湊足四位數字。  
Each answer must be given as an integer between 0 and 9999. In case of an answer less than 1000, leading zeros should be included to make up four digits.
9. 除特殊情況外，參賽者於本項目完結前不能提早交卷或離場。  
Under normal circumstances, contestants are not allowed to leave the contest venue before the end of this session.
10. 違反比賽規則者有可能被取消參賽資格。  
Any contestant who violates the rules and regulations of the competition might risk disqualification.
11. 參賽者如對比賽過程或試題內容有任何疑問或爭議，參賽者須於當天比賽結束後立即向大會提出，否則不予受理。大會保留是次比賽的所有最終決定權。  
If you have any queries, you should contact the officer-in-charge immediately after the competition. Late queries will not be entertained. The decision of the organizing committee will be final.

時限：45 分鐘  
Time Allowed: 45 minutes

總分：100  
Total marks: 100

1. 若  $\overline{3104A50A6}$  可同時被 3 及 8 整除，求 A 的值。 (3 分)  
Find the value of  $A$  if  $\overline{3104A50A6}$  is divisible by 3 and 8. (3 marks)
2. 若  $a$  除以 6 時，餘數是 5；若  $b$  除以 8 時，餘數是 2。求  $4a + 3b$  除以 24 時，所得的餘數。 (4 分)  
When  $a$  is divided by 6, the remainder is 5. When  $b$  is divided by 8, the remainder is 2. If  $4a + 3b$  is divided by 24, find the remainder. (4 marks)
3. 計算  $\frac{1 \times 2 \times 4 + 2 \times 4 \times 8 + 3 \times 6 \times 12 + \dots + 506 \times 1012 \times 2024}{1 \times 3 \times 9 + 2 \times 6 \times 18 + 3 \times 9 \times 27 + \dots + 506 \times 1518 \times 4554}$ 。 (5 分)  
Evaluate  $\frac{1 \times 2 \times 4 + 2 \times 4 \times 8 + 3 \times 6 \times 12 + \dots + 506 \times 1012 \times 2024}{1 \times 3 \times 9 + 2 \times 6 \times 18 + 3 \times 9 \times 27 + \dots + 506 \times 1518 \times 4554}$ . (5 marks)
4. 下圖中為連接 17 個點的道路網絡。2 個相連點之間的距離為 100 米。湯姆從白點出發，用最短的路徑經過所有 16 個黑點至少一次，並最後回到白點。求路徑的總長 (以米表示)。 (4 分)  
The following figure shows a network of roads connecting 17 dots. The distance between 2 connected dots is 100 m. Tom takes the shortest path to travel from the white dot, visiting all the 16 black dots at least one time and finally returns to the white dot. Find the total length of his path (in m). (4 marks)

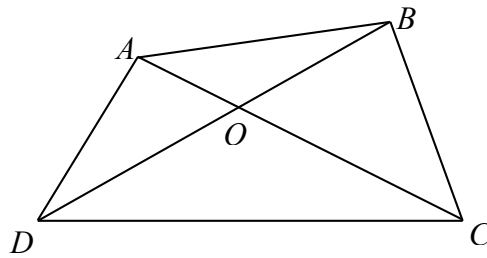


5. 根據規律，找出橫線上的數字。1, 1, 2, 3, 5, 8, 13, \_\_\_\_\_, 34, 55 (3 分)  
Find the missing number in the pattern. 1, 1, 2, 3, 5, 8, 13, \_\_\_\_\_, 34, 55 (3 marks)
6. 求  $\frac{2}{3} + \frac{2}{15} + \frac{2}{35} + \dots + \frac{2}{323} + \frac{2}{399}$  的值。 (4 分)  
Find the value of  $\frac{2}{3} + \frac{2}{15} + \frac{2}{35} + \dots + \frac{2}{323} + \frac{2}{399}$ . (4 marks)
7. 保羅從  $A$  到  $B$  之間進行了往返旅程。他去的時候以每小時 3 公里的速度步行，回來的時候以每小時 5 公里的速度步行。整個旅程的平均速度是每小時多少公里？ (5 分)  
Paul made a round trip between  $A$  and  $B$ . He walked at a speed of 3 kilometers per hour going there and 5 kilometers per hour coming back. What was his average speed for the whole journey in kilometers per hour? (5 marks)

8. 求  $5^{2025}$  被 7 除的餘數。 (4 分)  
 Find the remainder when  $5^{2025}$  is divided by 7. (4 marks)

9. 下圖中，四邊形  $ABCD$  的對角線  $AC$  與  $BD$  相交於  $O$ 。已知  $\triangle ABD$  面積是  $12 \text{ cm}^2$ ， $\triangle BCD$  的面積是  $18 \text{ cm}^2$ ，若  $AO = 4 \text{ cm}$ ，求  $OC$  的長度。 (6 分)

In the following figure, in the quadrilateral  $ABCD$ , the diagonals  $AC$  and  $BD$  intersect at point  $O$ . It is given that the area of  $\triangle ABD$  is  $12 \text{ cm}^2$  and the area of  $\triangle BCD$  is  $18 \text{ cm}^2$ . If  $AO = 4$ , find the length of  $OC$ . (6 marks)



10. 甲、乙、丙、丁四個旅行團分別有遊客 77 人，101 人，93 人和 97 人。現在要把每個團各分成人數相同的小組，使每組的人數盡可能最多，以便乘車參觀遊覽。已知甲、乙、丙三個旅行團分組後，所剩的人數相同，那麼丁旅行團分組後還剩多少人？ (5 分)

The four tour groups A, B, C and D had 77, 101, 93 and 97 tourists respectively. It is now necessary to divide each group into groups of the same number, so that the number of people in each group is as large as possible for the tour by car. It is known that the number of people left after the grouping of the three tour groups A, B and C are the same, how many people are left after the grouping of tour group D? (5 marks)

11. 在黑板上寫下 1000 到 2025 的數字時，共寫了幾多個「2」？ (7 分)  
 When the numbers from 1000 to 2025 are written on the blackboard, how many "2" are written? (7 marks)

12. 在 9:15，鐘面上時針和分針所形成的鈍角是  $x^\circ$ ，求  $10x$  的值。 (5 分)  
 At 9:15, the obtuse angle between the hour hand and the minute hand is  $x^\circ$ . Find the value of  $10x$ . (5 marks)

13. 如果正整數  $a$  和  $b$  滿足方程  $\frac{ab}{a+b} = 39$ ，求  $a$  的最大值。 (6 分)

If positive integers  $a$  and  $b$  satisfy the equation  $\frac{ab}{a+b} = 39$ ,

find the greatest possible value of  $a$ . (6 marks)

14. 如果把分數  $\frac{23}{2024}$  的分子和分母依次減去正整數  $a$  和  $b$ ，其結果是  $\frac{1}{123}$ 。求  $a+b$  的最小值。 (6分)

If we subtract positive integers  $a$  and  $b$  from the numerator and denominator of fraction  $\frac{23}{2024}$  respectively, the result is  $\frac{1}{123}$ . Find the minimum value of  $a+b$ . (6 marks)

15. 根據表格內數字的排列，找出 A 的值。 (5分)  
From the number pattern in the table, find the value of A. (5 marks)

3	13	11	A
9	7	17	15

16. 現有橙 95 個，分給甲、乙兩班學生吃，甲班分到的橙有  $\frac{2}{9}$  是壞的，其他是好的，乙班分到的橙有  $\frac{3}{16}$  是壞的，其他是好的，甲、乙兩班分到的好橙共有多少個？ (5分)  
There are 95 oranges in class A and class B.  $\frac{2}{9}$  oranges in class A are rotten and others are fresh, while  $\frac{3}{16}$  oranges in class B are rotten and others are fresh, how many fresh oranges are in class A and class B? (5 marks)

17. 將 1、3、5、7 組成不同的四位數(所有數位不重覆)，求這些四位數之和。 (6分)  
Find the sum of all 4-digit numbers(all digits are not repeated) formed by 1, 3, 5 and 7. (6 marks)

18. 當一個桶子裝了 35% 的水時，總重 1890 克；裝了 60% 的水時，總重 3140 克。請問這個空桶子重多少克？ (4分)  
A bucket weighs 1890 grams when it is 35% full of water. It weighs 3140 grams when it is 60% full. How much does the empty bucket weigh in grams? (4 marks)

19. 如果  $a+b=111$  而且  $\frac{a}{b}=\frac{1}{2}$ ，那麼  $a \times b = ?$  (7分)

If  $a+b=111$  and  $\frac{a}{b}=\frac{1}{2}$ , then  $a \times b = ?$  (7 marks)

20.  $20252025 \times 2025 - 20242024 \times 2024$  的首 4 位數。 (6分)  
Find the first 4 digits of  $20252025 \times 2025 - 20242024 \times 2024$ . (6 marks)

試卷完 END OF PAPER