

**第四屆全港小學數學挑戰賽(2017-2018)**  
**The 4<sup>th</sup> Hong Kong Primary Mathematics Challenge (2017-2018)**

初賽 (二零一七年十二月二日)  
 Semi-Final (2<sup>nd</sup> December, 2017)

小五組                      個人項目                      試卷  
 Primary 5                      Individual Event                      Question Paper

**參賽者須知 Instructions to Contestants**

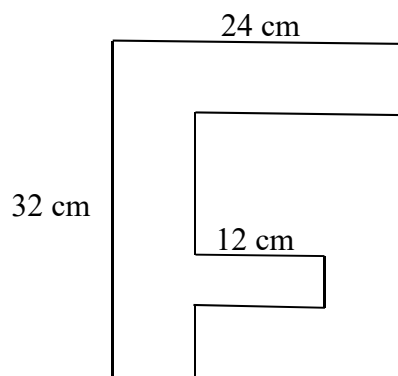
1. 在比賽過程中，參賽者必須將准考證放在桌上。  
 You should place your Admission Form on your desk for the whole session.
2. 於比賽期間必須關掉所有手提電話、通訊工具及其他響鬧裝置。  
 During the competition, you should switch off your mobile phone and any other electronic or communication devices that can emit sound.
3. 本項目以筆試形式舉行，須於限時 45 分鐘內完成所有題目。  
 Contestants should finish all questions in this 45-minutes written test.
4. 在答題紙上填寫學校名稱、參賽者姓名及班級、參賽者編號、座位編號。  
 Write your name, class, 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. 除非問題特別聲明，分數的答案須化至最簡。  
 Unless otherwise stated by the question, answers of fraction should be expressed in their simplest form.
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：四十五分鐘  
Time Allowed: 45 minutes

總分：100  
Total marks: 100

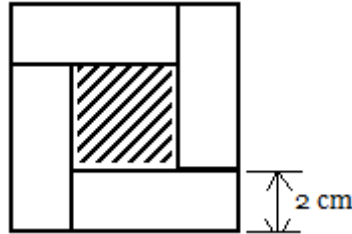
- 簡化以下分數。  
Simplify the following fraction. (2 分)  
(2 marks)

$$\frac{1}{6 - \frac{1}{5 - \frac{1}{4 - \frac{1}{3}}}}$$
- 求  $8^1 + 8^2 + 8^3 + \dots + 8^{2018}$  的個位數字。  
Find the units digit of  $8^1 + 8^2 + 8^3 + \dots + 8^{2018}$ . (2 分)  
(2 marks)
- 求以下數列中  $a$  的值。  
Find the value of  $a$  in the following sequence. (3 分)  
(3 marks)  
2, 6, 12, 20, 30,  $a$
- 若把 675 寫成兩個正整數的積，求該兩個正整數之差的最小可能值。  
If 675 is written as the product of two positive integers, find the least possible value of the difference between these two integers. (3 分)  
(3 marks)
- 若  $abcde + edcba = 89298$ ，求  $a + b + c + d + e$  的值。  
If  $abcde + edcba = 89298$ , find the value of  $a + b + c + d + e$ . (3 分)  
(3 marks)
- 火車裏有 84 個乘客。當  $\frac{2}{7}$  的乘客離開火車後，剩下的乘客有 48 個是男性。那麼火車上還有女乘客多少人？  
There are 84 passengers on the train. After  $\frac{2}{7}$  of the passengers have got off, there are 48 male passengers on the train. How many female passengers are still there? (3 分)  
(3 marks)
- 計算圖形的周界。  
Find the perimeter of the figure. (3 分)  
(3 marks)



8. 下圖中，四個相同的長方形及一個小正方形組成一個大正方形，且大及小正方形的面積相差  $40\text{cm}^2$ 。若長方形的闊是  $2\text{cm}$ ，求長方形的長度。 (4 分)

In the figure below, four identical rectangles and one square are used to form a bigger square. The difference between the areas of the bigger square and the smaller square is  $40\text{ cm}^2$ . If the width of the rectangle is  $2\text{ cm}$ , find the length of the rectangle.



(4 marks)

9. 農場內有豬及雞共 300 隻，牠們的腳總數為 900。農場內各有多少隻豬及多少隻雞？ (4 分)

The total number of pigs and chickens in a farm is 300. The total number of legs of the pigs and the chickens is 900. How many pigs and chickens are there in the farm respectively?

(4 marks)

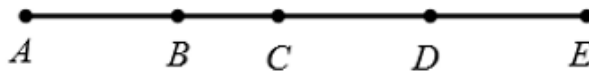
10. 若七個連續單數(奇數)之和是 189，找出七個單數(奇數)中最小的一個數。 (4 分)  
If the sum of seven consecutive odd numbers is 189, find the smallest odd number among the seven numbers. (4 marks)

11. 求首十五個質數之和。 (4 分)  
Find the sum of the first 15 prime numbers. (4 marks)

12. 求  $100\frac{1}{2} - 99\frac{1}{4} + 98\frac{1}{2} - 97\frac{1}{4} + 96\frac{1}{2} - 95\frac{1}{4} + \dots + 2\frac{1}{2} - 1\frac{1}{4}$  的值。 (5 分)

Find the value of  $100\frac{1}{2} - 99\frac{1}{4} + 98\frac{1}{2} - 97\frac{1}{4} + 96\frac{1}{2} - 95\frac{1}{4} + \dots + 2\frac{1}{2} - 1\frac{1}{4}$ . (5 marks)

13. 圖中的直線中， $AB = 20\text{ cm}$ ， $CE = 36\text{ cm}$ 及 $AC = BD$ 。求 $DE$ 的長度。 (6 分)  
In the following straight line,  $AB = 20\text{ cm}$ ,  $CE = 36\text{ cm}$  and  $AC = BD$ . Find the length of  $DE$ . (6 marks)



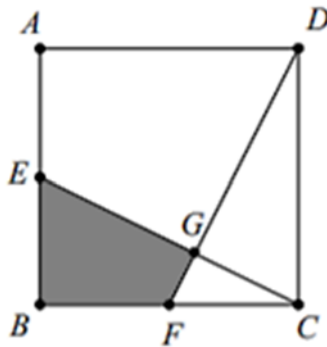
14. 定義  $[X, Y] = \frac{1}{Y} \oplus \frac{1}{X}$  及  $X \oplus Y = X + 7Y$ 。求 $[1, 7]$ 的值。 (6 分)

Define  $[X, Y] = \frac{1}{Y} \oplus \frac{1}{X}$  and  $X \oplus Y = X + 7Y$ . Find the value of  $[1, 7]$ .

(6 marks)

15. 若四個連續數的平方的和是 230，求這四個數之和的平方。 (7 分)  
If the sum of the squares of four consecutive numbers is 230, find the square of the sum of these four numbers. (7 marks)

16. 若一個長方形的長及闊各增加 5 cm，它的面積便會增加  $95 \text{ cm}^2$ 。  
求原來長方形的周界。 (7 分)  
If the length and width of a rectangle are both increased by 5 cm, then the area of the rectangle will be increased by  $95 \text{ cm}^2$ . Find the perimeter of the original rectangle. (7 marks)
17. 設  $H$  和  $K$  為正整數。  
若  $H \times H \times H = 3528 \times K$ ，求  $K$  最小的可能值。 (8 分)  
Let  $H$  and  $K$  be positive integers.  
If  $H \times H \times H = 3528 \times K$ , find the smallest possible value of  $K$ . (8 marks)
18. 有多少個形如  $2ab6$  的四位數能被 3 和 11 整除？ (8 分)  
How many 4-digit numbers in the form of  $2ab6$  are divisible by 3 and 11? (8 marks)
19. 一個凸 19 邊形共有多少條對角線？ (9 分)  
How many diagonals does a convex 19-sided polygon have? (9 marks)
20. 已知正方形  $ABCD$  的邊長是 20 cm， $E$  及  $F$  分別是  $AB$  及  $BC$  的中點。  
求四邊形  $BFGC$  的面積。 (9 分)  
Given a square with sides equal to 20 cm,  $E$  and  $F$  are the mid-point of  $AB$  and  $BC$  respectively. Find the area of the quadrilateral  $BFGC$ . (9 marks)



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