

第二屆全港小學數學挑戰賽(2015-2016)  
The Second Annual Hong Kong Primary Mathematics Challenge (2015-2016)

決賽 (二零一六年四月二日)  
Final (2<sup>nd</sup> April, 2016)

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

1. 下列四個分數，哪一個最大、哪一個最小？ (3 分)  
Among the following fractions, which is the greatest and which is the least? (3 marks)

$$\frac{173}{218}, \frac{436}{591}, \frac{761}{914}, \frac{388}{483}$$

2. 將 22 分 12 秒 化為小時。 (3 分)  
What is the hour(s) equal to 22 minutes and 12 seconds? (3 marks)

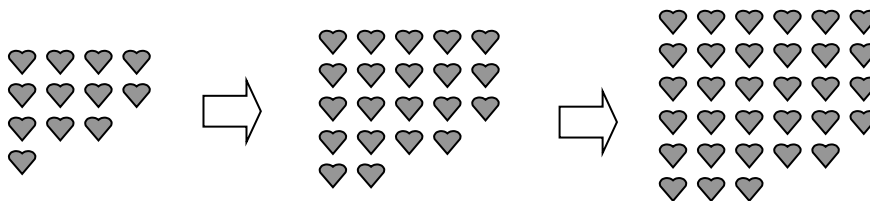
3. 若 2016 年 9 月 7 日 是星期三，那麼 2017 年 9 月 7 日 是星期幾？ (3 分)  
If 7<sup>th</sup> September 2016 is Wednesday, then what day is 7<sup>th</sup> September 2017? (3 marks)

4. 六甲班學生今天按下列時間表測驗。  
The students of 6A class have tests on different subjects today. The following is the timetable.

| 開考時間/Start   | 科目/Subject          | 時限/Duration   |
|--------------|---------------------|---------------|
| 8 : 25 am    | 數學/Mathematics      | 45 分鐘/minutes |
|              | 中文/Chinese Language | 55 分鐘/minutes |
|              | 小息/Recess           | 20 分鐘/minutes |
|              | 英文/English Language | 65 分鐘/minutes |
| 放學/Dismissal |                     |               |

- 求六甲班學生今天的放學時間。 (3 分)  
What time does the 6A class dismiss today? (3 marks)

5. 觀察下列圖像，第 12 個圖有多少個 ♥ ？  
Observe the following pictures, find the number of ♥ in the 12th picture.



第 1 個圖  
1st picture

第 2 個圖  
2nd picture

第 3 個圖  
3rd picture

(3 分)  
(3 marks)

6. 圖中，陰影部分佔以下圖形面積的百分之幾？ (4 分)

In the figure, find the percentage of the area of the shaded region to that of the figure?

(4 marks)



7. 求最少要擲普通骰子多少次才可保證得到最少 8 次相同的結果。 (4 分)

In order to obtain the same result at least 8 times, what is the minimum number of times an ordinary die should be thrown?

(4 marks)

8. 求  $17 \times 17 \times 17 \times 17 \times 17 \times 17 \times 17 \times 17 \times 17 \times 17 \times 17 \times 17 \times 17 \times 17$  的個位數字。 (4 分)

Find the unit digit of  $17 \times 17 \times 17 \times 17 \times 17 \times 17 \times 17 \times 17 \times 17 \times 17 \times 17 \times 17 \times 17 \times 17$ .

(4 marks)

9. 用 0, 2, 4, 6, 8 五個數字，可組成多少個沒有數位重覆且數值少於 6300 的四位數？

(5 分)

How many 4-digit numbers with no repeated digit are formed by 0, 2, 4, 6, 8 and the values of these numbers are less than 6300 ?

(5 marks)

10. 把以下 8 個數分成兩組，每組有 4 個數，且每組的積相等。 (5 分)

Divide the following eight numbers into 2 groups. Each group has 4 numbers and their products are equal.

(5 marks)

15, 19, 30, 39, 46, 57, 92, 117

11. 圖中 9 個圓圈組成四個等式，其中三個是橫式，一個是直式。請在這 9 個圓圈中填入 1–9 九個數字，使得這四個等式都成立。  
 注意：每個數字必須填一次及不能重複。 (6 分)

Put one of the nine numbers from 1 to 9 into each of the spaces in the figures making that all the four arithmetic algorithms are true.

Note: Each number must be filled once and cannot be repeated. (6 marks)

$$\begin{array}{ccc} \bigcirc & - & \bigcirc = \bigcirc \\ & & \times \\ \bigcirc & \div & \bigcirc = \bigcirc \\ & & = \\ \bigcirc & + & \bigcirc = \bigcirc \end{array}$$

12. 定義  $a * b = \frac{a}{b} + \frac{b}{4a} - ab + K$ ，其中  $K$  為一常數。 (5 分)  
 已知  $2 * 3 = 8$ ，求  $3 * 2$  的值。

Define  $a * b = \frac{a}{b} + \frac{b}{4a} - ab + K$ , where  $K$  is a constant. (5 marks)

It is given that  $2 * 3 = 8$ , find the value of  $3 * 2$ .

13. 去年電腦學會共有 42 名會員，其中男生佔  $\frac{5}{7}$ 。今年有數名男生退出，使男生人數佔所有會員的  $\frac{2}{3}$ 。問今年的男生較去年少了多少？ (6 分)

There were 42 members in computer club last year. Among them,  $\frac{5}{7}$  were male.

This year, some boys leave the computer club, so that  $\frac{2}{3}$  are male.

How many male members leave the club this year? (6 marks)

14. 有一個特別的分數：當分子減去 4，可化簡為  $\frac{1}{2}$ ；當分母加上 3，可化簡為  $\frac{5}{9}$ 。求這個特別的分數。 (6 分)

There is a special fraction. When 4 is subtracted from the numerator, it can be simplified to  $\frac{1}{2}$ . When 3 is added to the denominator, it can be simplified to  $\frac{5}{9}$ .

Find this special fraction. (6 marks)

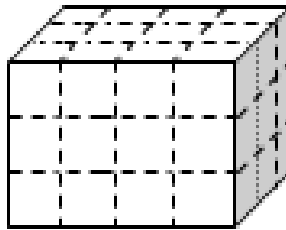
15. 在 1 至 2047 之間，有多少個數字分別被 4、7、9 除後，所得餘數均為 3？  
(5 分)

How many numbers are there from 1 to 2047 that give a remainder of 3 when they are divided by 4, 7 and 9 separately? (5 marks)

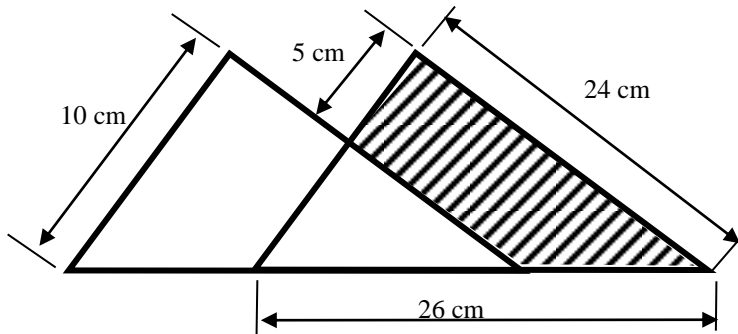
16. 將一長方體的表面涂上漆油，然後沿著虛線切成小立方體(如圖)。有多少個小立方體 (a) 只有一面有漆油？  
(b) 共兩面有漆油？  
(c) 共三面有漆油？ (6 分)

Paint the surface of a cuboid and then cut it into small cubes (as shown in the figure).

How many small cubes have paint (a) on one side only?  
(b) on two sides?  
(c) on three sides? (6 marks)



17.



圖中由兩個大小相同的直角三角形組成。求陰影部份面積。 (6 分)

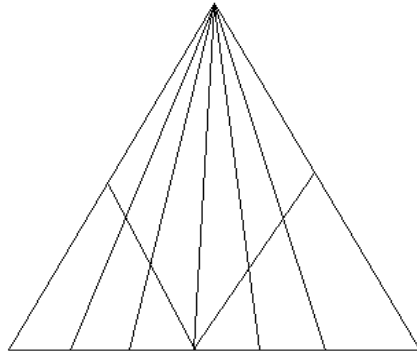
The figure is formed by two identical right angled triangles. Find the area of the shaded region. (6 marks)

18. 請問圖中共有多少個三角形?

(7 分)

How many triangle(s) on the diagram?

(7 marks)



19. 設  $y = 360n$ ，其中  $n$  為一自然數。若  $y$  是一個立方數，求  $n$  的最小值。 (7 分)

Let  $y = 360n$ , where  $n$  is a natural number.

(7 分)

If  $y$  is a cube number, find the least value of  $n$ .

(7 marks)

20. 計算  $\frac{1}{1+2} + \frac{1}{1+2+3} + \frac{1}{1+2+3+4} + \dots + \frac{1}{1+2+3+\dots+2016}$ 。

(9 分)

Find the value of  $\frac{1}{1+2} + \frac{1}{1+2+3} + \frac{1}{1+2+3+4} + \dots + \frac{1}{1+2+3+\dots+2016}$ .

(9 marks)

試卷完 END OF PAPER