

**第五屆全港小學數學挑戰賽(2018-2019)**  
**The 5<sup>th</sup> Hong Kong Primary Mathematics Challenge (2018-2019)**

初賽 (二零一八年十二月一日)  
 Semi-Final (1<sup>st</sup> December, 2018)

小六組	組別項目	試卷
Primary 6	Group 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：400

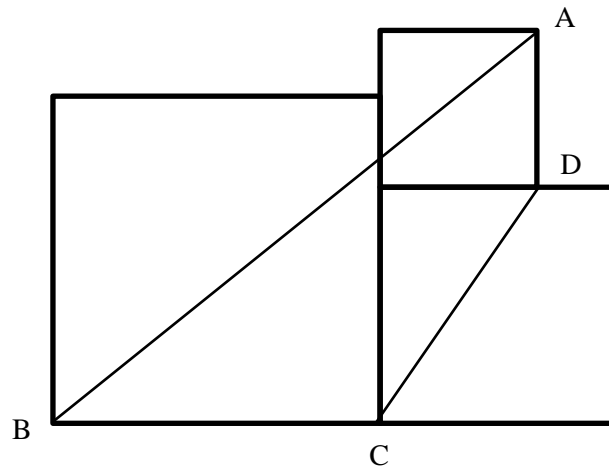
Total marks: 400

1. 已知  $a^2 = a \times a$ ，計算  $(6048+1729)^2$ 。  
It is given that  $a^2 = a \times a$ , evaluate  $(6048+1729)^2$ . (15 分)  
(15 marks)
2. 設  $a = (9876543)(9876543) - (9876545)(9876541)$ ，求  $a$ 。  
Find the value of  $a$  if  $a = (9876543)(9876543) - (9876545)(9876541)$ . (17 分)  
(17 marks)
3. 用 1 至 9 這九個正整數組成一個九位數，每個數字只能用一次。能被 36 整除的最大數是多少？  
Use the nine positive integers from 1 to 9 to form a nine-digit number. Each number can only be used once. What is the largest number formed that can be divisible by 36? (20 分)  
(20 marks)
4. 設  $m$  和  $n$  為正整數。若  $m + 2$  是  $n$  的倍數而  $n + 2$  是  $m$  的倍數，求  $n$  所有可能值之和。  
Let  $m$  and  $n$  be positive integers. If  $m + 2$  is a multiple of  $n$  while  $n + 2$  is a multiple of  $m$ , find the sum of all possible values of  $n$ . (20 分)  
(20 marks)
5. 有兩個正整數  $A$  和  $B$ ，它們之和是 657。已知  $A$  的個位是 8。若把  $A$  的個位刪掉，就與  $B$  相等，求  $A$  的值。  
There are two positive integers  $A$  and  $B$ . Their sum is 657. The last digit of  $A$  is 8. If the last digit of  $A$  is deleted,  $A$  will be equal to  $B$ . Find the value of  $A$ . (23 分)  
(23 marks)
6. 迴文數是指把一個數的數字按相反的順序重新排列後，所得到的數和原來的數一樣，例如 5、88、101 及 1221。求 1 至 2018 之間（包括 1 和 2018）的迴文數的數量。  
A palindromic number is a number that remains the same when its digits are reversed, such as 5, 88, 101 and 1221. Find the number of palindromic numbers between 1 and 2018 (including 1 and 2018). (24 分)  
(24 marks)

7. 圖中三個正方形的邊長分別為 5 cm、4 cm 和 2 cm。求四邊形  $ABCD$  的面積。(24 分)

In the figure, the length of the sides of the three squares are 5 cm, 4 cm and 2 cm respectively. Find the area of the quadrilateral  $ABCD$ .

(24 marks)



8. 一個三角形的邊長的比例是  $6:7:9$ ，若最長的邊與最短的邊相差 18 cm，問該三角形的周界是多少？

(25 分)

The ratio of the sides of a triangle is  $6:7:9$ . If the difference between the longest side and the shortest side is 18 cm, what is the perimeter of the triangle?

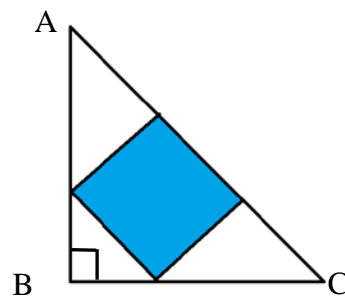
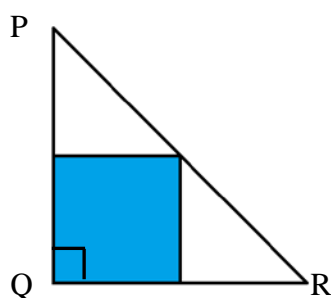
(25 marks)

9. 三角形  $PQR$  和三角形  $ABC$  都是面積相同的等腰直角三角形。若三角形  $PQR$  中的著色正方形的面積是 72 平方單位，問三角形  $ABC$  中的著色正方形的面積是多少？

(25 分)

Triangle  $PQR$  and  $ABC$  are right isosceles triangle of equal size. If the coloured square in Triangle  $PQR$  has an area of 72 square units, what is the area of the coloured square in Triangle  $ABC$ ?

(25 marks)

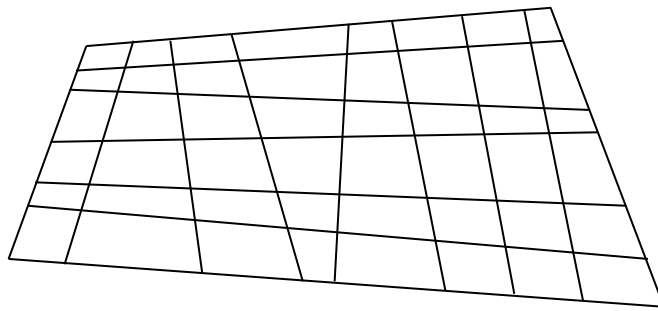


10. 求圖中四邊形的總數。

(26 分)

How many quadrilaterals are there in the following figure?

(26 marks)

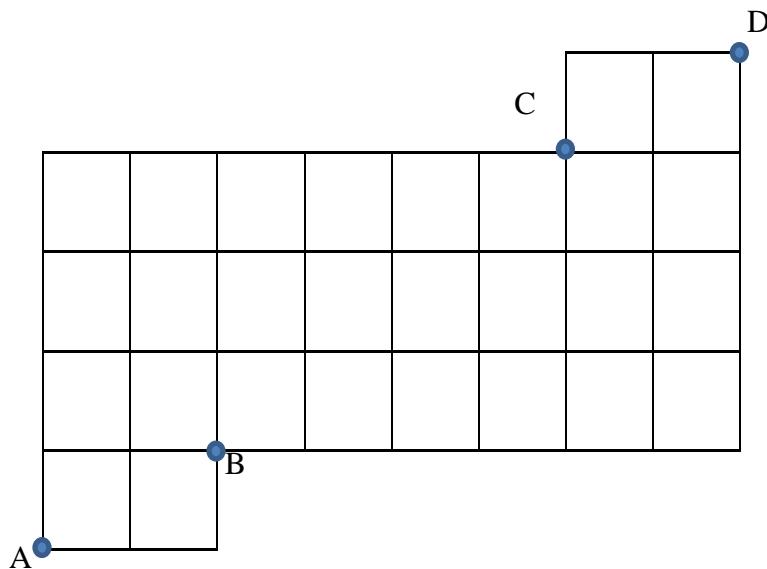


11. 彼得需沿圖中線段由  $A$  走到  $D$ ，而且他必須途經  $B$  及  $C$ 。他只能向前走 ( $\rightarrow$ ) 或向上走 ( $\uparrow$ )。問他有多少種方法完成路程？

(27 分)

Peter walks along the lines from  $A$  to  $D$  and he needs to pass  $B$  and  $C$ . He can go either forward ( $\rightarrow$ ) or upward ( $\uparrow$ ). Find the number of different ways to reach  $D$ .

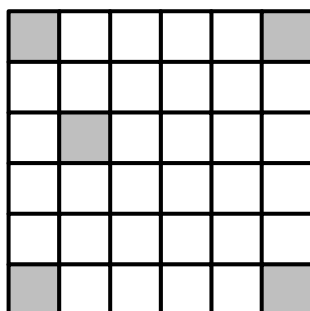
(27 marks)



12. 圖中所示為一個  $6 \times 6$  的方格圖，其中 5 個小正方格被填上一種顏色。若再將 1 個小正方格填上同一顏色，使方格圖成為軸對稱圖形，問有多少種填色方法？

(27 分)

The figure shows a  $6 \times 6$  square grid, in which 5 small squares are filled with a particular colour. If one more square is going to be filled with the same colour so that the grid becomes an axial symmetric figure, how many ways can it be done? (27 marks)

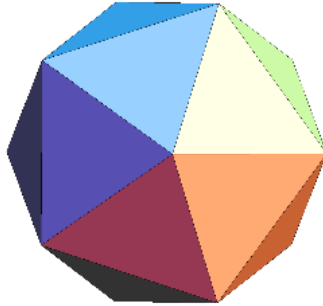


13. 圖中，一個正二十面體由 20 個相同的等邊三角形組成。求正二十面體的邊的數目。

(29 分)

In the figure, a regular icosahedron is made by 20 identical equilateral triangles. Find the number of edges of a regular icosahedron.

(29 marks)



14. 牧場上有一片草地，每隻牛每天吃一定份量的草，草每天生長一定的份量。11 隻牛吃 7 天便吃完草地上全部的草，21 隻牛吃 3 天便吃完全部草。問草地上會有多少隻牛吃 15 天便會吃完所有的草？

(31 分)

In a field, each cow eats a certain amount of grass every day while a certain amount of grass grows every day. If 11 cows eat all grass in the whole field in 7 days and 21 cows eat all grass in 3 days, how many cows would there be to eat all grass in 15 days?

(31 marks)

15. 已知一個三位數  $\overline{abc}$  的任何兩個數字之和為第三個數字的倍數。

(a) 當  $a = b = c$  時(例如  $a = b = c = 1$ ， $\overline{abc} = 111$ )，這樣的三位數有多少個？ (10 分)

(b) 當只有兩個數字相等時(例如  $a = b = 1$ ， $c = 2$ ， $\overline{abc} = 112$ )，這樣的三位數有多少個？ (11 分)

(c) 其他情況下，這樣的三位數有多少個？ (11 分)

Given that the sum of any two digits of a 3-digit number  $\overline{abc}$  is equal to a multiple of the remaining digit.

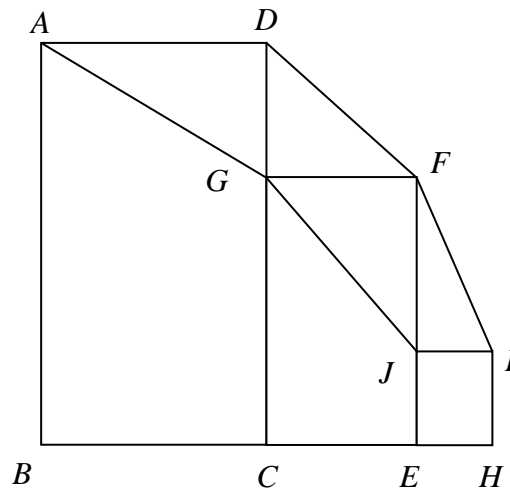
(a) When  $a = b = c$  (e.g.  $a = b = c = 1$ ， $\overline{abc} = 111$ )，how many such 3-digit number are there? (10 marks)

(b) When only two digits are equal (e.g.  $a = b = 1$ ， $c = 2$ ， $\overline{abc} = 112$ )，how many such 3-digit number are there? (11 marks)

(c) How many such 3-digit number are there in the remaining cases? (11 marks)

16. 長方形  $ABCD$ 、 $GCEF$ 、 $JEHI$  如下圖排列，它們的長寬比都是  $4:3$ ，最大長方形的面積是  $36$ ，最小長方形的面積為  $12$ 。問四邊形  $AGFD$  的面積與四邊形  $GJIF$  的面積之和是多少？ (35 分)

Rectangles  $ABCD$ ,  $GCEF$  and  $JEHI$  are arranged as shown in the figure such that all the ratios of length to width are  $4:3$ . The area of the largest rectangle is  $36$  and the area of the smallest rectangle is  $12$ . What is the sum of the area of quadrilaterals  $AGFD$  and  $GJIF$ ? (35 marks)



試卷完 END OF PAPER