

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

決賽 (二零一九年三月三十日)
Final (30th March, 2019)

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

- 如 $A = B + B + B$
 $A + A + C = C + C$ ，
求 C 相等於多少個 B 。 (1 分)

If $A = B + B + B$
 $A + A + C = C + C$ ，
find the number of B equal to C . (1 mark)
- 求 $14 \times 24 \times 34 \times \dots \times 814$ 的個位數。 (2 分)
Find the units digit of $14 \times 24 \times 34 \times \dots \times 814$. (2 marks)
- 將四個每個為 $3\text{cm} \times 5\text{cm} \times 7\text{cm}$ 之長方體拼合成為一個大長方體。求大長方體的最大可能的表面面積。 (3 分)
A large cuboid is composed of 4 identical cuboids of dimensions $3\text{cm} \times 5\text{cm} \times 7\text{cm}$.
Find the largest possible surface area of the large cuboid. (3 marks)
- 一個袋子內有 12 個紅色、10 個白色、6 個藍色和 2 個黃色的球。最少要從袋中抽出多少個球才能確定有 4 個相同顏色的球被抽出？ (3 分)
A bag contains 12 red, 10 white, 6 blue and 2 yellow balls. At least how many balls should be drawn from the bag such that there would be at least 4 balls of the same colour? (3 marks)
- 參考下列的規律，求 X 的值。 (3 分)
According to the following pattern, find the value of X . (3 marks)

0001 = 1 ,
0010 = 2 ,
0011 = 3
0100 = 4 ,
0101 = 5 ,
0110 = 6 ,
.....
1111 = X
- 彼得有糖果若干粒，若平均分配給 7 人或 8 人，都是剩餘 5 粒。若平均分配給 9 人，餘 4 粒。求彼得擁有糖果數量的最小值。 (4 分)
Peter has some candies. If he shares the candies among 7 or 8 people, 5 candies are left in each case. If he shares the candies among 9 people, 4 candies are left. Find the least number of candies he has. (4 marks)
- 若 $3 \Omega 8 = 17$ ， $5 \Omega 11 = 26$ 及， $6 \Omega 9 = 27$ ，求 $7 \Omega 10$ 。 (4 分)
If $3 \Omega 8 = 17$ ， $5 \Omega 11 = 26$ and $6 \Omega 9 = 27$ ，find $7 \Omega 10$. (4 marks)

8. 一塊底長 $25\frac{1}{2}$ 米的平行四邊形農地，高是底的 $1\frac{2}{3}$ 倍。求農地的面積。 (4 分)

A farmland is in the shape of a parallelogram with base $25\frac{1}{2}$ meters long and the height is $1\frac{2}{3}$ times of the base. Find the area of the farmland. (4 marks)

9. 試將 14, 15, 18, 20, 27 及 28 分成兩組，令每組三個數的積相等。 (5 分)

Divide the following six numbers 14, 15, 18, 20, 27 and 28 into two groups such that the products of the three numbers of each group are equal. (5 marks)

10. 若 $\frac{4}{9} < \frac{5}{A} < \frac{6}{7}$ ，其中 A 是整數，且 $\frac{5}{A}$ 是最簡分數，求 A 的可能值的數目。 (5 分)

If $\frac{4}{9} < \frac{5}{A} < \frac{6}{7}$, where A is an integer and $\frac{5}{A}$ is a reduced fraction, find the number of possible values of A . (5 marks)

11. $2^4 \times 3^3 \times 4^5 \times 5^{12}$ 是一個 n 位數，求 n 的值。 (5 分)

$2^4 \times 3^3 \times 4^5 \times 5^{12}$ is a n -digit number, find the value of n . (5 marks)

12. 某教授培養某有機體，發現其重量為 x 克時，第二天的重量會是 $(x + \frac{1}{x})$ 克。

若第一天有機體的重量為 1 克，求第四天有機體的重量。 (5 分)

A professor cultivates some organic organism. If the weight of the organism is x g on the first day, its weight will be $(x + \frac{1}{x})$ g the next day. If it is 1 g on the first day, find the weight of the organic organism on the fourth day. (5 marks)

13. 已知三個不同的整數之和是 126， (6 分)

(a) 求這三個數的最大公因數(H.C.F.)的最大值。

(b) 求這三個數的最小公倍數(L.C.M.)的最小值。

Given that the sum of three different integers is 126, (6 marks)

(a) find the maximum value of the highest common factor (H.C.F.) of these three integers.

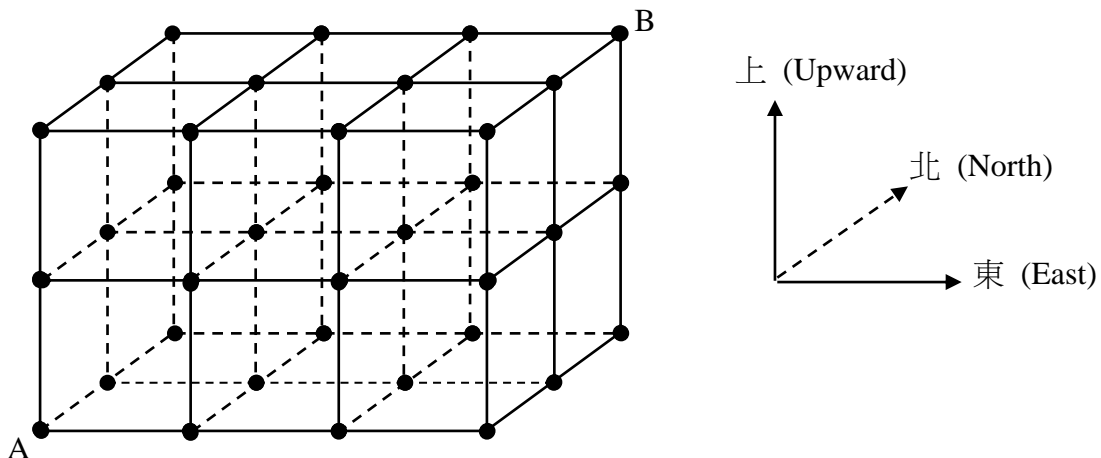
(b) find the minimum value of the least common multiple (L.C.M.) of these three integers.

14. 龜與兔進行 500 米賽跑，龜與兔的速度分別為 10 米/分鐘及 50 米/分鐘。兔於龜起行後立刻在起點睡了 30 分鐘，兔醒來後立即追上去。求兔遇上龜時距離終點有多遠？ (6 分)

In a 500-metre race, the speed of the turtle and the rabbit are 10 meter/minute and 50 meter/minute respectively. When the turtle starts walking, the rabbit sleeps immediately at the starting point for 30 minutes. After the rabbit wakes up, the rabbit starts chasing the turtle. Find the distance between their meeting point and the finishing line. (6 marks)

15. 彼得由 A 點爬到 B 點，他只可以向北爬、向東爬或向上爬。每到一個折點，他可以決定改變方向或繼續朝原本的方向走。求由 A 點爬到 B 點有多少條不同的路徑？ (6 分)

Peter climbs from point A to point B. He can only climb northward, eastward or upward. He can decide whether to change his direction or not at each junction. Find the total number of different paths that Peter can climb from point A to point B. (6 marks)



16. 考慮以下數列：

1, 2, 3, 5, 8, 13, 21, 34, x , ..., y , ...

第 12 項

- (a) 求 x 和 y 的值。
 (b) 數列中首 120 項有多少個偶數？ (7 分)

Consider the following sequence:

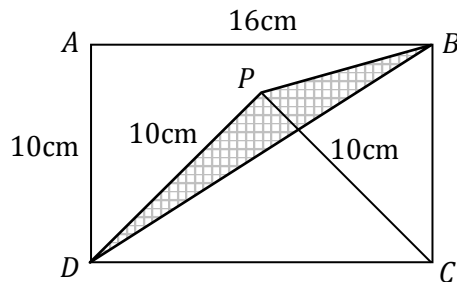
1, 2, 3, 5, 8, 13, 21, 34, x , ..., y , ...

The 12th term

- (a) Find the values of x and y .
 (b) How many even numbers are there in the first 120 terms of the sequence? (7 marks)

17. 在長方形 $ABCD$ 中， $AB=16\text{ cm}$ 及 $AD=10\text{ cm}$ 。 P 為 $ABCD$ 內的一點，使 $PD=PC=10\text{ cm}$ ，求 $\triangle PBD$ 之面積。 (7 分)

In the rectangle $ABCD$, $AB=16\text{ cm}$ and $AD=10\text{ cm}$. P is a point inside $ABCD$ such that $PD=PC=10\text{ cm}$. Find the area of $\triangle PBD$. (7 marks)



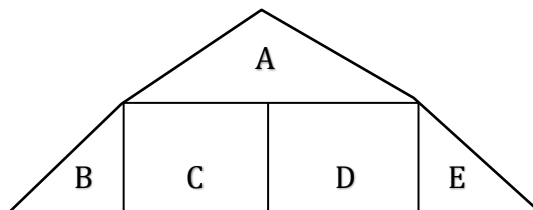
18. 求以下算式中各英文字母可代表的數字(0-9)，使算式之和是最大。
(每個英文字母均代表不同數字) (8 分)

Find the digits (0-9) represented by the different letters in the following calculation such that the sum of the calculation is maximum.
(Each letter has a different value.) (8 marks)

$$\begin{array}{rcccc}
 & A & B & C & D \\
 + & 2 & 0 & 1 & 9 \\
 \hline
 & E & F & G & H
 \end{array}$$

19. 用 3 種不同的顏色塗在下圖中五個不同的區域中，相鄰的區域要塗上不同的顏色，問有多少種塗法？ (8 分)

How many ways are there to paint the following five regions by using 3 different colours such that the adjacent regions are in different colours? (8 marks)



20. 彼得和瑪麗在一個環形遠足徑以相反方向步行。已知彼得走一圈需時 84 分鐘。若他們在同一起點出發，並在 35 分鐘後第一次相遇，求瑪麗走一圈所需時間。 (8 分)

Peter and Mary are walking in opposite directions on a circular hiking trail. Peter takes 84 minutes to finish a lap. If they start at the same point at the same time, they will meet for the first time after 35 minutes. Find the time required for Mary to finish a lap. (8 marks)

試卷完 END OF PAPER