

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. 計算 $12.3 \times 45.6 - 78.9$ 。 (1 分)
Evaluate $12.3 \times 45.6 - 78.9$. (1 mark)

2. 求首十個平方數之和。 (1 分)
Find the sum of the first 10 square numbers. (1 mark)

3. 參考下列的規律，求 X 的值。 (2 分)
According to the following pattern, find the value of X . (2 marks)
 $0001 = 1$,
 $0010 = 2$,
 $0011 = 3$
 $0100 = 4$,
 $0101 = 5$,
 $0110 = 6$,

 $10100 = X$

4. 已知 a, b 為正整數，且 $\frac{1}{a} + \frac{1}{b} = \frac{6}{35}$ ，求 $a+b$ 的最小值。 (3 分)
Given that a, b are positive integers and $\frac{1}{a} + \frac{1}{b} = \frac{6}{35}$, find the minimum value of $a+b$. (3 marks)

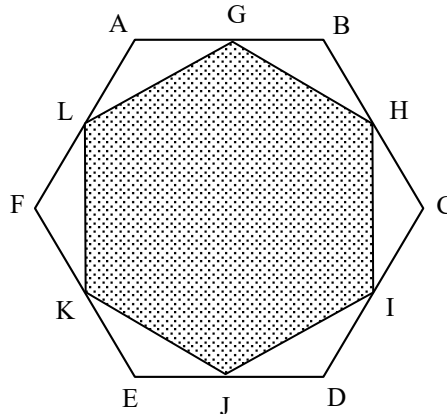
5. 由 1234 至 3251，數字“1”出現了多少次？ (3 分)
How many ‘1’s are there from 1234 to 3251? (3 marks)

6. 設 $A = 2017 \times 2018 \times 2019$ ，求 $A \div 11$ 的餘數。 (4 分)
Let $A = 2017 \times 2018 \times 2019$, find the remainder of $A \div 11$. (4 marks)

7. 計算 $\frac{2002}{1 \times 3} + \frac{2002}{3 \times 5} + \frac{2002}{5 \times 7} + \frac{2002}{7 \times 9} + \frac{2002}{9 \times 11}$ 。 (4 分)
Evaluate $\frac{2002}{1 \times 3} + \frac{2002}{3 \times 5} + \frac{2002}{5 \times 7} + \frac{2002}{7 \times 9} + \frac{2002}{9 \times 11}$. (4 marks)

8. 圖中，ABCDEF 是一個正六邊形，G、H、I、J、K 及 L 分別是六邊形各邊的中點。問陰影部份的面積是 ABCDEF 的面積的幾分之幾？ (5 分)

In the figure, ABCDEF is a regular hexagon. G, H, I, J, K and L are the mid-points of the sides of the hexagon respectively. What is the proportion of the area of the shaded region to the area of ABCDEF? (5 marks)



9. 求以下數列首 30 項之和。

1, 2, 2, 3, 3, 3, 4, 4, 4, 4, 5, 5, 5, 5, 5, (5 分)

Find the sum of the first 30 terms of the following sequence.

1, 2, 2, 3, 3, 3, 4, 4, 4, 4, 5, 5, 5, 5, 5, (5 marks)

10. 有 1L 濃度為 $x\%$ 的酒精，倒掉了一半後，再加入 500 mL 清水。然後再倒掉了 200 mL 的混合物，並加入 200 mL 40% 濃度的酒精。若最終的混合物的酒精濃度為 18%，求 x 的值。 (5 分)

There is 1L of $x\%$ concentration of alcohol. After half of it is poured off, 500 mL of water is added to the alcohol. Then 200 mL of the mixture is poured off and 200 mL of 40% concentration of alcohol is added to it. If the concentration of alcohol of the final mixture is 18%, find the value of x . (5 marks)

11. 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。至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？ (5 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? (5 marks)

12. 求 60 的正因數之和。 (6 分)

Find the sum of all positive factors of 60. (6 marks)

13. 1 至 100 中 (包括 1 和 100)，不能被 2、5 或 7 整除的數字有多少個？ (6 分)

From 1 to 100 (including 1 and 100), how many numbers are not divisible by 2, 5 or 7? (6 marks)

14. 考慮以下數列：

2、4、10、28、82、 x 、730、……，

求 x 的值。

(6 分)

Consider the following sequence:

2, 4, 10, 28, 82, x , 730, …… ,

find the value of x .

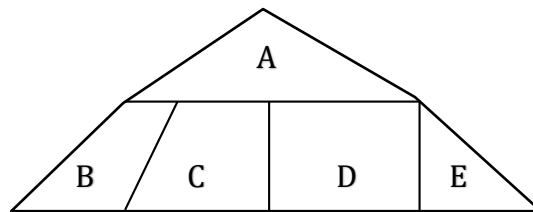
(6 marks)

15. 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？

(6 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?

(6 marks)



16. 計算 $9999 \times 2222 + 3333 \times 3334$ 。

(7 分)

Evaluate $9999 \times 2222 + 3333 \times 3334$.

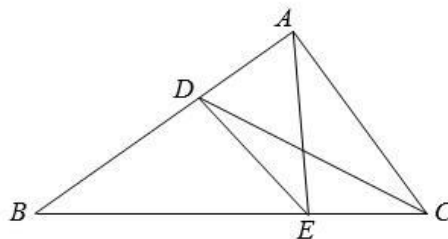
(7 marks)

17. 如圖所示，在 $\triangle ABC$ 中， $\triangle BDE$ 、 $\triangle DCE$ 和 $\triangle ACD$ 的面積分別是 90 cm^2 、 30 cm^2 和 28 cm^2 。求 $\triangle ADE$ 的面積。

(7 分)

As shown in the diagram, in the triangle $\triangle ABC$, the area of $\triangle BDE$, $\triangle DCE$ and $\triangle ACD$ are 90 cm^2 , 30 cm^2 and 28 cm^2 respectively. Find the area of $\triangle ADE$.

(7 marks)

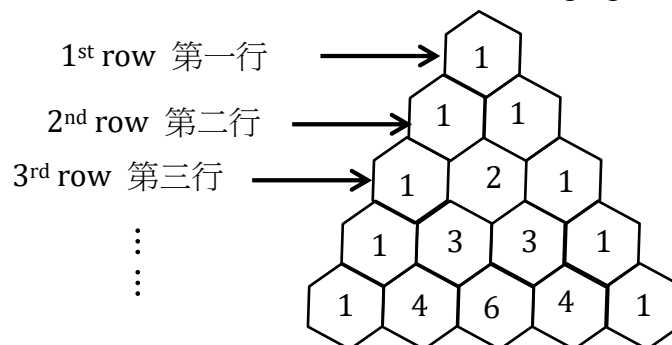


18. 根據下圖，求第七行數字的和。

(7 分)

Find the sum of the numbers of the 7th row in the following figure.

(7 marks)



19. 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 the maximum.

(Each letter has a different value.)

(8 marks)

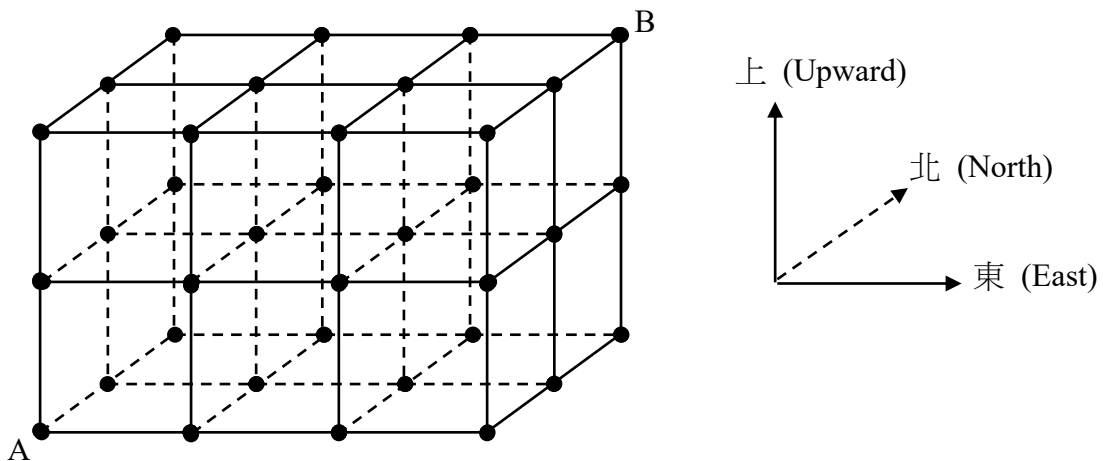
$$\begin{array}{rcccc}
 & A & B & C & D \\
 + & 2 & 0 & 1 & 9 \\
 \hline
 & E & F & G & H
 \end{array}$$

20. 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？

(9 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 . (9 marks)



試卷完 END OF PAPER