

第八屆全港小學數學挑戰賽(2021-2022)
The 8th Hong Kong Primary Mathematics Challenge (2021-2022)

決賽 (二零二一年十二月四日)
Final (4th December, 2021)

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，須於限時一小時內完成所有題目。
Contestants should finish all questions in this 1-hour 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：一小時
Time Allowed: 1 hour

總分：100
Total marks: 100

1. 如圖，第十層的數字總和為多少？ (3 分)
In the figure, what is the sum of the numbers in the 10th layer? (3 marks)

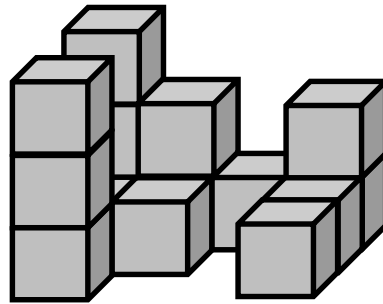
1 第一層 1st layer
2 3 第二層 2nd layer
4 5 6 第三層 3rd layer
⋮
⋮

2. 志明用了 100 元購買 5 元、10 元及 20 元的郵票，每一種郵票他至少買 1 張，問他的購買方法有多少種？ (5 分)

There are three types of stamps: 5-dollar, 10-dollar and 20-dollar stamps in a shop. Tom needs to buy at least one for each type with exactly 100 dollars. How many ways can Tom buy the stamps? (5 marks)

3. 圖中立體是由十五個相同的正方體組成，若該立體的體積是 15 cm^3 ，求該立體的總表面面積。 (4 分)

The solid in the figure is composed of 15 identical cubes. If the volume of the solid is 15 cm^3 , find the total surface area of the solid. (4 marks)



4. 求 4^{2021} 被 7 除的餘數。 (4 分)
Find the remainder when 4^{2021} is divided by 7. (4 marks)

5.

37	x	89
16		145
4	20	42

求 x 。 (7 分)
Find x . (7 marks)

6. 觀察下列圖像，第 16 個圖有多少個 ♥ ？
From the following pictures, find the number of ♥ in the 16th picture.



第 1 個圖
1st picture



第 2 個圖
2nd picture



第 3 個圖
3rd picture

(4 分)
(4 marks)

7. 4 個蘋果及 4 個橙的總價錢為 \$48，而 5 個蘋果及 2 個橙的總價錢為 \$43.5。
求 1 個橙的價錢。 (4 分)
The total price of 4 apples and 4 oranges is \$48, while the total price of 5 apples and 2 oranges is \$43.5. Find the price of an orange. (4 marks)

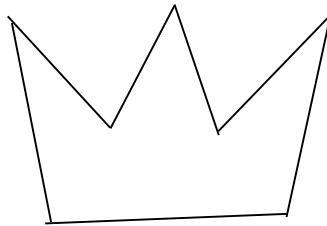
8. 一個七位數可同時被 2、3 及 5 整除。求這七位數的最大可能值與最小可能值的差。
(4 分)
A 7-digit number can be divisible by 2, 3 and 5. Find the difference between the greatest possible value and the least possible value of this 7-digit number. (4 marks)

9. 設 $\overline{A20211204}$ 可被 3 整除，求 A 的最大可能值。
(4 分)
If $\overline{A20211204}$ is divisible by 3, find the greatest possible value of A . (4 marks)

10. 若 $1\oplus 4=10$; $2\oplus 5=14$; $6\oplus 10=40$; $9\oplus 11=30$ 。求 $2\oplus 11$ 。
(4 分)
If $1\oplus 4=10$; $2\oplus 5=14$; $6\oplus 10=40$; $9\oplus 11=30$. Find $2\oplus 11$. (4 marks)

11. 求 14453 和 1937 的最大公因數 (H.C.F.)。
(4 分)
Find the H.C.F. of 14453 and 1937. (4 marks)

12. 已知一個三角形的內角和為 180° ，求以下圖形的內角和。
(4 分)
Given that the angle sum of a triangle is 180° , find the angle sum of the following figure. (4 marks)



13. 已知 $\frac{5}{-3 + \frac{37}{21-a}} = 23$ ，求 a 的值。
(5 分)
Given $\frac{5}{-3 + \frac{37}{21-a}} = 23$, find the value of a . (5 marks)

14. 求 $5 \times 10 \times 15 \times 20 \times \dots \times 45 \times 50$ 的積中，問末尾有多少個零？
(4 分)
In the product of $5 \times 10 \times 15 \times 20 \times \dots \times 45 \times 50$, how many trailing zeros are there? (4 marks)

15. 有三個連續正整雙數 g 、 h 、 k 。如果 $h \times k$ 與 $g \times k$ 相差 72，求 k 的值。
(5 分)
 g , h and k are three consecutive positive even integers. If the difference between $h \times k$ and $g \times k$ is 72, find the value of k . (5 marks)

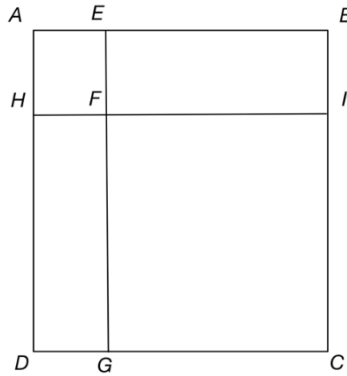
16. 若 $(A + B):C = 2 : 1$ ， $A : (B + C) = 2 : 3$ ，求 $A : B : C$ 。
(4 分)
If $(A + B):C = 2 : 1$ ， $A : (B + C) = 2 : 3$ ，find $A : B : C$. (4 marks)

17. N 與 1350 的乘積是一個整數的平方，而 N 與 726 的乘積是另一個整數的平方，求 N 的最小值。
(4 分)
The product of N and 1350 is the square of an integer. The product of N and 726 is the square of another integer. Find the minimum value of N . (4 marks)

18. 若 $a \times b = 1921$ ，其中 a 和 b 是大於 1 的正整數，求 $a + b$ 的值。
(5 分)
If $a \times b = 1921$, where a and b are positive integers greater than 1, find the value of $a + b$. (5 marks)

19. 圖中， $AEFH$ 、 $EBIF$ 、 $ICGF$ 和 $GDHF$ 均是長方形，其中 $AE = 4$ cm，長方形 $AEFH$ 、 $ICGF$ 和 $ABCD$ 的面積分別為 24 cm^2 、 315 cm^2 和 513 cm^2 ，已知圖中所有邊長均為整數值，求長方形 $EBIF$ 的面積。
(5 分)

In the figure, $AEFH$, $EBIF$, $ICGF$ and $GDHF$ are rectangles, where $AE = 4$ cm and the area of the rectangles $AEFH$, $ICGF$ and $ABCD$ are 24 cm^2 , 315 cm^2 and 513 cm^2 respectively. Given that all the sides in the figure are integers. Find the area of $EBIF$.
(5 marks)



20. 如下圖，第 22 行最左邊的數是什麼？

第一行				1				
第二行			2	3	4			
第三行		5	6	7	8	9		
第四行	10	11	12	13	14	15	16	

.....

(4 分)

As shown in the figure below, what is the leftmost number in Line 22?

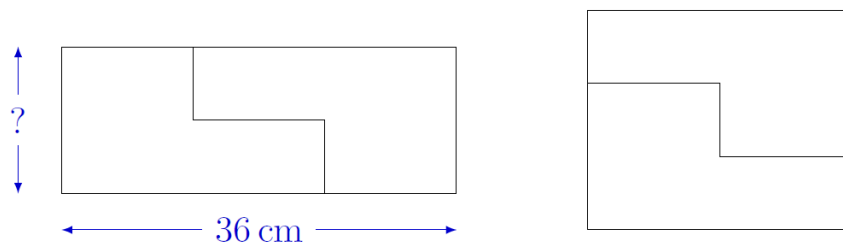
Line 1				1				
Line 2			2	3	4			
Line 3		5	6	7	8	9		
Line 4	10	11	12	13	14	15	16	

.....

(4 marks)

21. 一個矩形的邊長為 36cm。現將它分割成兩等塊後重組一個正方形，如下圖所示。求這個矩形的闊為多少。
(5 分)

The length of a rectangle is 36cm. It is cut into two identical pieces and rearranged to form a square, as shown in the below figure. Find the width of the rectangle.



(5 marks)

22. $\frac{1}{\frac{1}{2016} + \frac{1}{2017} + \frac{1}{2018} + \frac{1}{2019} + \frac{1}{2020} + \frac{1}{2021}}$ 的整數部分是多少？
(8 分)

What is the integer part of $\frac{1}{\frac{1}{2016} + \frac{1}{2017} + \frac{1}{2018} + \frac{1}{2019} + \frac{1}{2020} + \frac{1}{2021}}$?
(8 marks)

試卷完 END OF PAPER