

**第九屆全港小學數學挑戰賽(2022-2023)**  
**The 9<sup>th</sup> Hong Kong Primary Mathematics Challenge (2022-2023)**

**決賽 (二零二二年十二月三日)**  
**Final (3<sup>rd</sup> December, 2022)**

**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

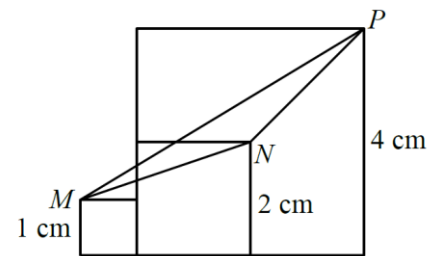
總分：100  
Total marks: 100

- 求 24 和 36 小於 1000 的最大公倍數。  
Find the largest common multiple of 24 and 36 which is less than 1000. (3 分) (3 marks)
- 三個相異正整數的積為 2022，其這三數之和的最大值。  
The product of three different positive integers is 2022, find the largest value of the sum of the three integers. (3 分) (3 marks)
- 填入長除試算內的空格。  
Fill in the empty squares of the long division. (4 分)

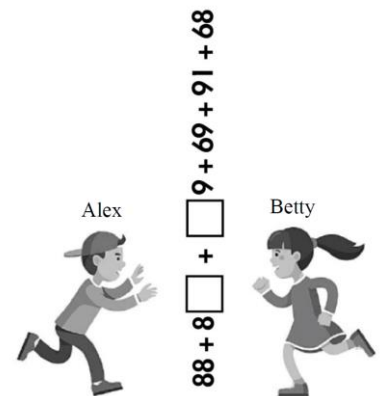
$$\begin{array}{r}
 \square 6 \square \\
 9 \overline{) \square \square \square \square} \\
 \underline{\square 8} \\
 5 \square \\
 \underline{\square \square} \\
 3 \square \\
 \underline{\square 6} \\
 0
 \end{array}$$

- 求  $\frac{4}{1 \times 5} + \frac{4}{5 \times 9} + \dots + \frac{4}{17 \times 21}$  的值。  
Find the value of  $\frac{4}{1 \times 5} + \frac{4}{5 \times 9} + \dots + \frac{4}{17 \times 21}$ . (5 分) (5 marks)
- 根據規律，找出橫線上的數字。  
Find the missing number in the pattern. (4 分) (4 marks)  
-7, -6, -3, 2, 9, 18, 29, \_\_\_\_\_, 57, ...

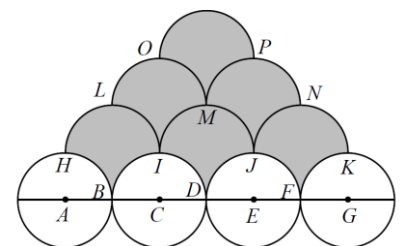
- 右圖顯示三個正方形，其邊長分別為 1 cm，2 cm 及 4 cm。求圖中三角形  $MNP$  的面積。  
In the figure, there are 3 squares whose side lengths are 1 cm, 2 cm and 4 cm respectively. What is the area of the triangle  $MNP$  (cm<sup>2</sup>)? (5 分) (5 marks)



- 小雲(Betty)與小吉(Alex)面對面站立在操場上，並在地上寫上一條數學算式分隔他們。由於視角問題(左右讀法不同)，他們會看出為不同的題目。若在算式內的兩個空格填上適當的數字，則小雲和小吉分別計算出這條算式的總和值完全一樣，求這個總和值。  
Alex and Betty are facing each other. Between them, there is a sequence of digits and plus signs written on the ground, as shown in the following figure. From their points of view, Alex and Betty see two different expressions. Two digits can be filled in the two squares so that their expressions have the same value. What is the value? (7 分) (7 marks)



- 右圖顯示由十個半徑為 2cm 的圓形卡紙所組成的圖案。已知四個共線點  $A, C, E, G$  為白色圓的圓心。 $AHIC, CIJE, EJKG, COPE$  為長方形及  $BLMD, DMNF$  為正方形。求圖中陰影部分的面積。  
Ten circular cards of radius 2 cm each are arranged as shown in the figure. Given that the four collinear points  $A, C, E, G$  are the centres of the white cards, and  $AHIC, CIJE, EJKG, COPE$  are rectangles and  $BLMD, DMNF$  are squares. What is the area of the shaded region (cm<sup>2</sup>)? (5 分) (5 marks)

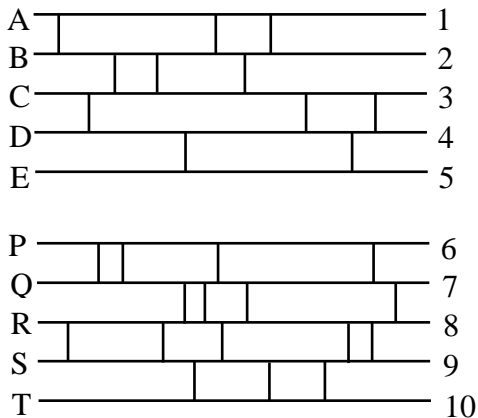


9. 求下圖中 P、Q、R、S、T 的值。

(5 分)

In the figure, find the values of P, Q, R, S and T.

(5 marks)



A =	2
B =	5
C =	3
D =	1
E =	4

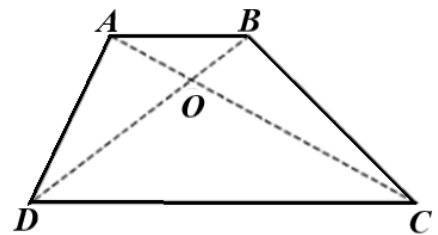
P =	
Q =	
R =	
S =	
T =	

10. 如右圖所示，四邊形  $ABCD$  的對角線  $AC$  和  $BD$  的交點是  $O$ 。  
 $\triangle AOD$ 、 $\triangle BOC$  及  $\triangle AOB$  的面積分別是  $14\text{cm}^2$ 、 $35\text{cm}^2$ 、 $10\text{cm}^2$   
 求  $\triangle DOC$  的面積。

(4 分)

In the figure, the diagonals  $AC$  and  $BD$  of the quadrilateral  $ABCD$  intersect at  $O$ . Given that the area of  $\triangle AOD$ ,  $\triangle BOC$ , and  $\triangle AOB$  is  $14\text{cm}^2$ ,  $35\text{cm}^2$ ,  $10\text{cm}^2$  respectively, find the area of the  $\triangle DOC$ .

(4 marks)



11. 已知梯形  $ABCD$  的面積是 224，其中  $X$  在  $BC$  上使得

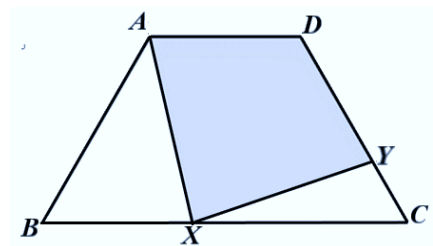
$AD = BX$  及  $BX = \frac{2}{3}XC$ 。  $Y$  在  $CD$  上使得  $2YC = YD$ 。

求陰影部分的面積。

(6 分)

It is given that the area of the trapezium  $ABCD$  is 224, where  $X$  is on  $BC$  such that  $AD = BX$  and  $BX = \frac{2}{3}XC$ .  $Y$  is on  $CD$  such that  $2YC = YD$ . Find the shaded area.

(6 marks)

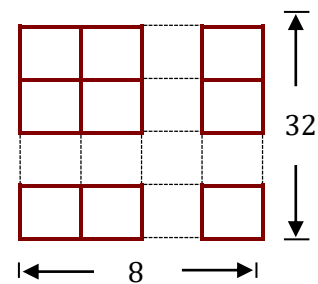


12. 右圖共有 256 個小方格，每格由四支火柴所砌成，求火柴的總數。

(5 分)

The figure contains 256 boxes, each is formed by four matches. Find the total number of matches.

(5 marks)



13. 如圖  $3 \times 3$  的方格中，填入適當的數字，使得其橫列、直行及對角線的數字和均相等，則  $a + b + c + d + e$  的值為多少？

(5 分)

A  $3 \times 3$  square array of numbers are shown in the figure, if the sum of each row, each column and each diagonal are the same, what is the value of  $a + b + c + d + e$ ?

(5 marks)

a	b	c
2	5	8
4	d	e

14.  $3^{2022} + 5^{2023}$  的個位數是多少？

(7 分)

What is the units digit of  $3^{2022} + 5^{2023}$ ?

(7 marks)

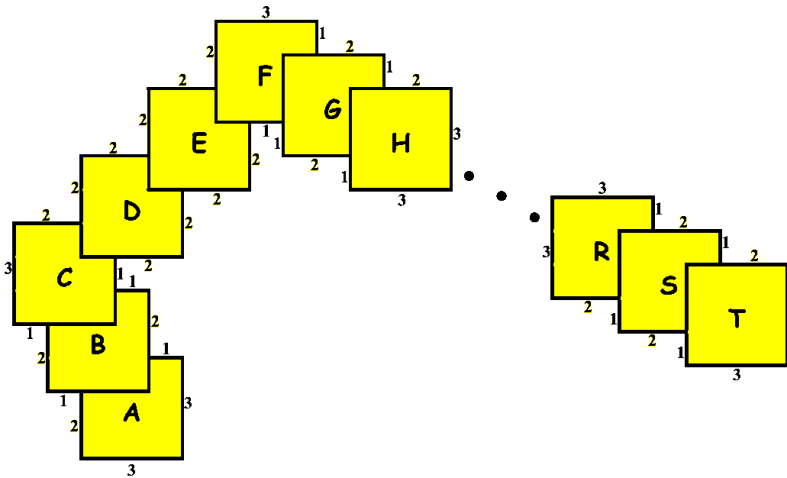
15.  $p$  是一個質數，且  $p^2 = 1\,104\,601$ ，求  $p$ 。

(5 分)

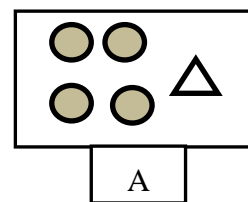
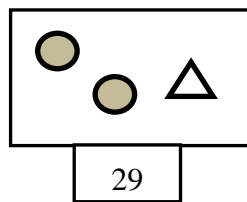
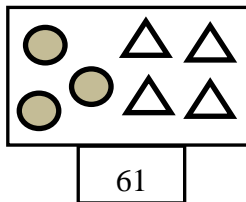
$p$  is a prime number and  $p^2 = 1\,104\,601$ , find  $p$ .

(5 marks)

16. 下面的圖案是由 20 個邊長 3 的正方形重疊形成。求圖案中陰影區域的總面積。(7 分)  
 The following pattern is formed by overlapping 20 squares of side 3 units. Find the total area of the shaded region in the pattern. (7 marks)



17. 求下圖中 A 的值。  
 In the following figures, find the value of A. (4 分) (4 marks)



18. 1 號車和 2 號車同時從 A、B 兩地相向開出。1 號車每小時行 56 千米，2 號車每小時行 48 千米，兩車在離中點 32 千米處相遇。求 A、B 兩地的距離。(5 分)

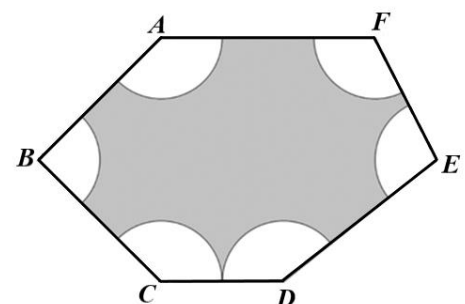
Car 1 and Car 2 oppositely start the journey from City A and B respectively at the same time. The speeds of Car 1 and Car 2 are 56 km/h and 48 km/h respectively. They meet with each other at 32 km away from the mid-point of City A and City B. Find the distance between City A and City B. (5 marks)

19. 從一張長方形的硬卡紙(邊長為正整數)的四個角均剪出一個邊長為 5 cm 的正方形，並把該硬卡紙摺成一個長方紙盒使得該容量為  $5405 \text{ cm}^3$ 。求原來長方形的硬卡紙的面積。(5 分)

Cut a 5 cm square from all four corners of a piece of rectangular cardboard (sides with positive integer), and fold the cardboard into a rectangular box such that its capacity is  $5405 \text{ cm}^3$ . Find the area of the original rectangle of cardboard. (5 marks)

20. 如圖所示， $ABCDEF$  為一六邊形，其中  $AB = BC = 13 \text{ cm}$ 、 $CD = 8 \text{ cm}$ 、 $DE = AF = 16 \text{ cm}$  及  $EF = 10 \text{ cm}$ 。已知各個扇形的半徑相等且以六邊形的頂點作為圓心，其中以 C 及 D 為圓心的扇形相切。求陰影部分的周界。(6 分)

(取  $\pi = 3.14$ ) (6 marks)  
 As shown,  $ABCDEF$  is a hexagon with  $AB = BC = 13 \text{ cm}$ ,  $CD = 8 \text{ cm}$ ,  $DE = AF = 16 \text{ cm}$  and  $EF = 10 \text{ cm}$ . It is given that the radii of each sector are equal and the vertex of the hexagon is the center of the circle, where the sectors with the centers C and D are tangent. Find the perimeter of the shaded area. (take  $\pi = 3.14$ ) (6 marks)



試卷完 END OF PAPER