



奧冠教育中心

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世界國際數學競賽總決賽 2018

# WORLD INTERNATIONAL MATHEMATICAL OLYMPIAD FINAL 2018

小學三年級 Primary 3

時限：120 分鐘

Time allowed: 120 minutes

試題

## Question Paper

考生須知：

### Instructions to Contestants:

1. 本卷包括 試題 乙份，試題紙不可取走。  
Each contestant should have ONE Question-Answer Book which CANNOT be taken away.
2. 本卷共 5 個範疇，每範疇有 6 題，共 30 題，每題 5 分，總分 150 分，答錯不扣分。  
There are 5 exam areas and 6 questions in each exam area. There are a total of 30 questions in this Question-Answer Book. Each carries 5 marks. Total score is 150 marks. No points are deducted for incorrect answers.
3. 請將答案寫在 答題紙 上。  
All answers should be written on ANSWER SHEET.
4. 比賽期間，不得使用計算工具。  
NO calculators can be used during the contest.
5. 本卷中所有圖形不一定依比例繪成。  
All figures in the paper are not necessarily drawn to scale.
6. 比賽完畢時，本試題會被收回。  
This Question-Answer Book will be collected at the end of the contest.

Write down the answer in the simplest form. If the calculation result is a fraction, please write down the answer as a proper or mixed fraction, decimal figure is also accepted. Marks will NOT be given for incorrect unit.

請將答案寫在 



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本試題不可取走。

**THIS Question-Answer Book CANNOT BE TAKEN AWAY.**

未得監考官同意，切勿翻閱試題，否則參賽者將有可能被取消資格。

**DO NOT** turn over this Question-Answer Book without approval of the examiner.

Otherwise, contestant may be **DISQUALIFIED**.

請以最簡形式填寫答案，若計算結果是分數，請確保為真分數或帶分數，或將計算結果寫成小數。錯誤單位將不給予任何分數。

Write down the answer in the simplest form. If the calculation result is a fraction, please write down the answer as a proper or mixed fraction, decimal figure is also accepted. Marks will NOT be given for incorrect unit.

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填空题 (第 1 至 30 題) (每題 5 分，答錯及空題不扣分)

Open-Ended Questions (1<sup>st</sup> ~30<sup>th</sup>) (5 points for correct answer, no penalty point for wrong answer)

Logical Thinking

邏輯思維

1. According to the pattern shown below, what is the number in the blank?

按以下規律，求在橫線上的數字。

1 、 8 、 15 、 22 、 29 、 36 、 \_\_\_\_ 、 ....

2. Today is Friday. Which day of the week was 22 days ago?

今天是星期五，22 天前是星期幾？

3. In order, we add 1, minus 2, times 3, divide by 4, times 5 and minus 6 to a number, and the answer is 129. What is the number?

某數順序加 1、減 2、乘 3、除 4、乘 5、減 6 後得出 129，求該數。

4. There is a bag containing marbles which is either red, green or yellow. There are in total 27 red marbles and yellow marbles; 26 yellow marbles and green marbles; and 25 red marbles and green marbles. How many marble(s) is / are there in total in the bag?

一個彈珠袋裏有紅、黃和綠色三種彈珠。紅色和黃色彈珠共有 27 顆，黃色和綠色彈珠共有 26 顆，紅色和綠色彈珠共有 25 顆。問這袋中有多少顆彈珠？

5. When Amy adds two numbers up, she miswrote 14 as 41. Then the sum becomes 97. What should the correct answer be?

艾美在計算一條加數時，把被加數 14 寫成了 41，和變成了 97，問原本的和應是多少？

6. When mum were 25 year olds, she gave birth to the elder brother. The brother is now 23 years old, and the younger sister is 3 years younger than her elder brother. How many year(s) are there between mum and the younger sister this year?

媽媽在 25 歲的時候生了哥哥。哥哥今年 23 歲，妹妹比哥哥小 3 歲，那媽媽今年比妹妹大多少歲？

請以最簡形式填寫答案，若計算結果是分數，請確保為真分數或帶分數，或將計算結果寫成小數。錯誤單位將不給予任何分數。

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Arithmetic

算術

7. Find the value of  $1012 \times 988 + 144$ .  
求  $1012 \times 988 + 144$  的值。
8. Find the value of  $4 + 8 + 12 + 16 + 20 + 24 + 28 + 32 + 36 + 40 + 44 + 48 + 52$ .  
求  $4 + 8 + 12 + 16 + 20 + 24 + 28 + 32 + 36 + 40 + 44 + 48 + 52$  的值。
9. Find the value of  $1 - 4 + 9 - 16 + 25 - \dots - 100 + 121$ .  
求  $1 - 4 + 9 - 16 + 25 - \dots - 100 + 121$  的值。
10. Find the value of  $1010 \div 2015 - 1 + 2010 \div 2015 + 1010 \div 2015 - 1$ .  
求  $1010 \div 2015 - 1 + 2010 \div 2015 + 1010 \div 2015 - 1$  的值。
11. What is the number that should be filled in the blank if the equation below is correct?  
在以下算式填上甚麼數字會使算式正確？  
 $\underline{\hspace{2cm}} \div 7 = 111$
12. Find the value of  $132 \times 1 + 132 \times 2 + 132 \times 3 + 132 \times 4$ .  
求  $132 \times 1 + 132 \times 2 + 132 \times 3 + 132 \times 4$  的值。

Number Theory

數論

13. Define  $a \oplus b = (9a + 6b) \div (10 - 9 + 8 - 7 + 6 - 5)$ , for example,  $5 \oplus 6 = 27$ . Find the value of  $(6 \oplus 9) \oplus 7$ .  
定義  $a \oplus b = (9a + 6b) \div (10 - 9 + 8 - 7 + 6 - 5)$ ，如  $5 \oplus 6 = 27$ ，求  $(6 \oplus 9) \oplus 7$  的值。
14. Dick and Eric have 24 apples. Dick has 4 fewer apples than Eric. How many apple(s) does Eric have?  
小迪和小力共有 24 個蘋果，小迪比小力少 4 個蘋果。問小力有多少個蘋果？
15. The age of mum is 3 times of that of Lily's. 5 years later, the sum of their ages is 58. How old is Lily now?  
今年媽媽的年齡是小玲的 3 倍，二人 5 年後的年齡相加等於 58，問今年小玲幾多歲？
16. Find the unit digit of  $2011^{2011} \times 2012^{2012} \times 2013^{2013} \times 2014^{2014} \times 2015^{2015}$ .  
求  $2011^{2011} \times 2012^{2012} \times 2013^{2013} \times 2014^{2014} \times 2015^{2015}$  的個位數。

請以最簡形式填寫答案，若計算結果是分數，請確保為真分數或帶分數，或將計算結果寫成小數。錯誤單位將不給予任何分數。

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17. Red Hoody picked flowers for her grandmother. The number of daisy that she picked is 2 times more than that of lily. The number of rose that she picked is 4 times as the number of lily. If she picked 15 daisies, how many rose(s) did she pick in total?

小紅帽去摘花給外婆，菊花的數目比百合多 2 倍，玫瑰的數目是百合的 4 倍，如果 菊花有 15 朵，問小紅帽摘了多少玫瑰？

18. Find the remainder of  $12345678987654321234567 \div 9$ .

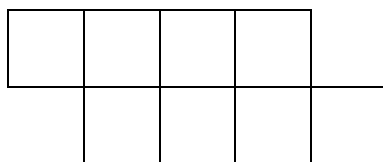
問  $12345678987654321234567 \div 9$  的餘數。

Geometry

幾何

19. How many square(s) is / are there in the figure below?

請問下圖有多少個正方形？



Question 19

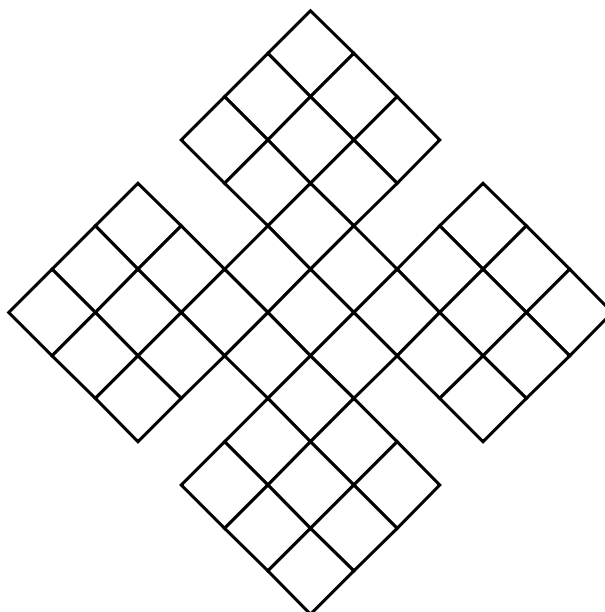
第 19 題

20. A larger square is divided into 9 identical smaller squares, and each smaller square has an area of  $4\text{cm}^2$ . Find the perimeter of the larger square in cm.

有一個正方形被分成 9 個相同的小正方形，每個小正方形的面積都是 4 平方厘米，問原本的正方形周界是多少厘米？

21. How many square (s) is / are there in the figure below?

下圖有多少個正方形？



Question 21

請以最簡形式填寫答案，若計算結果是分數，請確保為真分數或帶分數，或將計算結果寫成小數。錯誤單位將不給予任何分數。

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第 21 題

22. A prism has 57 edges, how many face(s) does this prism have?  
有一個柱體有 57 條邊，問這個柱體有多少個面？
23. 6 equilateral triangles are formed by cutting a regular hexagon. If the perimeter of the hexagon is 48cm, find the sum of the perimeter of those 6 triangles formed in cm.  
一個正六邊形被分成 6 個等邊三角形，六角形的周界是 48 厘米，問所有三角形的周界共有多少厘米？
24. At most how many line(s) can be formed by using 10 points on a plane?  
在平面上畫 10 點，最多可連成多少條線？

Combinatorics

組合數學

25. Betty starts studying at 7 p.m. and ends at 9: 30 p.m.. If Betty takes a 5-minute break every time after studying for 30 minutes, how many more minutes does she study than she rest?  
小貝在溫習，每溫習 30 分鐘休息 5 分鐘。她由晚上七時開始溫習，溫習到晚上九時半，問她溫習的時間比休息的時間多多少分鐘？
26. Eric and David have some candies. Eric gave half of his candies to David. David then ate 7 candies, and gives half of his remaining candies to Eric. At the end, Eric has 38 candies and David has 20 candies. How many candies does Eric have at the beginning?  
小力和小偉各有一堆糖果，小力把一半給了小偉，之後小偉吃了 7 顆自己的糖果，然後把手上的糖的一半給小力，這時小力有 38 顆糖果，小偉有 20 顆糖果。問原本小力有多少顆糖果？
27. How many even number(s) is / are there in the following numbers from the 1<sup>st</sup> to the 500<sup>th</sup>?  
下面的數由第 1 個到第 500 個數之間，有多少個奇數？( 偶數即是雙數 )  
2, 5, 8, 11, 14, 17, ...
28. David keeps half of his monthly salary for his rent, and half of the remaining half for transportation expense. Also he keeps \$2500 for daily meal and other expenses. At last he has \$800 for saving. How much does David earn a month?  
小偉每月發薪後，其中一半留作租金，餘下的一半用作交通費，保留 2500 元用作日常買食物及日用品等雜費，最後餘下 800 元作儲蓄。問小偉月薪多少元？
29. Pick 3 from 7 children to take part in Chinese competition. How many different combination(s) is / are there?  
7 個小孩中選 3 個參加中文比賽，有多少個不同可能性？
30. The volume of a big bucket is 3 times the volume of a medium bucket, and the volume of 2 medium buckets has same volume as 6 small ones. How many small buckets has the same volume as 3 big

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buckets?

1 個大水桶的容量是 1 個中水桶的 3 倍，2 個中水桶的容量和 6 個小水桶一樣。問 3 個大水桶的容量等於多少個小水桶的容量？

~ 全卷完 ~

~ End of Paper ~