



奧冠教育中心

OLYMPIAD CHAMPION EDUCATION CENTRE

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香港國際數學競賽初賽 2019 (香港賽區)

HONG KONG INTERNATIONAL
MATHEMATICAL OLYMPIAD

HEAT ROUND 2019 (HONG KONG REGION)

小學四年級 Primary 4

時限: 60 分鐘

Time allowed: 60 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 4 題, 共 20 題, 每題 3 分, 總分 60 分, 答錯不扣分。
There are 5 exam areas and 4 questions in each exam area. There are a total of 20 questions in this Question-Answer Book. Each carries 3 marks. Total score is 60 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.

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.

請將答案寫在 **答題紙** 上。

All answers should be written on the ANSWER SHEET.

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。
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填空题 (第 1 至 20 題) (每題 3 分, 答錯及空題不扣分)

Open-Ended Questions (1st ~20th) (3 points for correct answer, no penalty point for wrong answer)

Logical Thinking

邏輯思維

1. Alice has 47 marks and Peter has 27 marks in Mathematics exam. If the average mark of Alice, Peter and Mary is 50, what is Mary's exam marks?
在數學考試中, 愛麗絲得到了 47 分, 彼德得到了 27 分。若愛麗絲、彼德和瑪麗的平均分是 50 分, 那麼瑪麗在數學考試中得多少分?
2. The sum of Alice's and Peter's ages is 36. If the age of Alice 3 years ago was the half of the age of Peter 9 years later, how old is Alice now?
愛麗絲和彼德現在的年齡和是 36。如果愛麗絲 3 年前的年齡是彼德 9 年後的年齡的一半, 那麼愛麗絲今年多少歲?
3. A book store had a box of books. One half but 10 fewer books were sold on the first day. One third of the remaining part and 6 more books were sold on the second day. Finally 10 books are left. How many book(s) did the book store have originally?
某書店有一箱書本, 第一天賣掉了一半少 10 本, 第二天賣掉了剩下的三分之一多 6 本, 最後剩下 10 本。問原本一箱書有多少本書?
4. 17th April is Sunday. Which day of the week is 17th June in the same year?
4 月 17 日是星期日, 同一年的 6 月 17 日是星期幾?

Arithmetic

算術

5. Find the value of $11+12+13+14+\dots+58+59$.
求 $11+12+13+14+\dots+58+59$ 的值。
6. Find the value of 10101×10101 .
求 10101×10101 的值。
7. Find the value of $13\times 24+26\times 38$.
求 $13\times 24+26\times 38$ 的值。
8. Find the value of $111\div 7+257\div 7-81\div 7$.
求 $111\div 7+257\div 7-81\div 7$ 的值。

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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All answers should be written on the ANSWER SHEET.

Number Theory

數論

9. If a 10-digit number $\overline{123456789A}$ is divisible by 9, find the maximum value of A .
若 10 位數 $\overline{123456789A}$ 可被 9 整除, 求 A 的最大值。

10. Find the unit digit of A if $A = \underbrace{2 \times 2 \times \dots \times 2}_{20's} \times 5 + \underbrace{3 \times 3 \times \dots \times 3}_{30's} \times 5 + \underbrace{4 \times 4 \times \dots \times 4}_{40's} \times 5$.
若 $A = \underbrace{2 \times 2 \times \dots \times 2}_{20's} \times 5 + \underbrace{3 \times 3 \times \dots \times 3}_{30's} \times 5 + \underbrace{4 \times 4 \times \dots \times 4}_{40's} \times 5$, 求 A 的個位數的值。

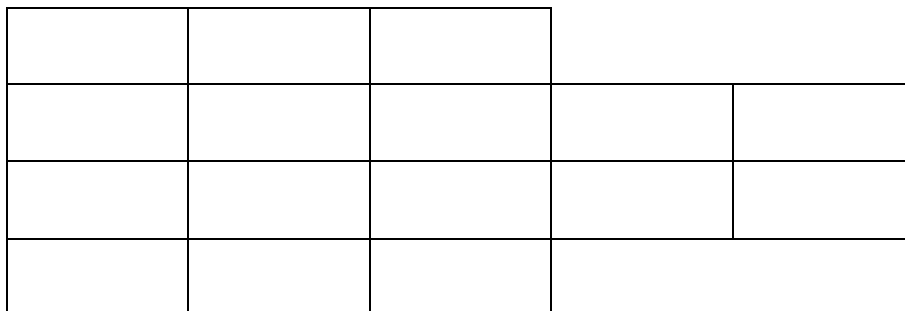
11. How many factors does 420 have?
420 有多少個因數?

12. The sum of positive integers A and B is 666. A is 5 times of B . Find the value of A .
兩個正整數 A 、 B 之和是 666, A 是 B 的 5 倍。求 A 的值。

Geometry

幾何

13. How many rectangle(s) is / are there in the figure below?
請問下圖有多少個長方形?



Question 13

第 13 題

14. The area of a rectangle is 24cm^2 . If sides of the rectangle are integers, find the sum of the value(s) of perimeter of the rectangle.

一個矩形的面積為 24 平方厘米, 邊長是整數, 求矩形的周界的可能值之和。

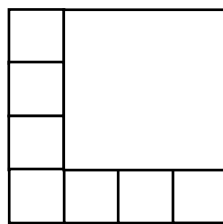
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15. The square below is cut into 8 squares. If the perimeter of the original square is 160cm, find the area of the larger square.

下圖的正方形被分割成 8 個正方形，若原正方形的周界為 160 厘米，求大正方形的面積。



Question 15

第 15 題

16. The perimeter of an equilateral triangle is 60cm. Now Alice combine 6 triangles to a hexagon. What is the perimeter of the hexagon in cm?

1 個等邊三角形的周界為 60 厘米，現時愛麗絲把 6 個三角形組合成 1 個正六邊形，求正六邊形的周界。(以厘米表示答案)

Combinatorics

組合數學

17. Alice draws all isosceles triangles whose perimeter is 30cm and length of sides are integers. How many different types of triangle(s) does she draw?

愛麗絲畫了所有周界為 30 厘米，且邊長為整數的等腰三角形。問她共畫了多少種不同的三角形？

18. Use digits 1, 3, 5 and 7 to form a 4-digit number such that the thousand digit is greater than tens digit or the hundred digit is greater unit digit. How many such 4-digit number(s) is / are there?

利用 1、3、5 和 7 組成一個四位數使千位比十位大或百位比個位大。這樣的四位數有多少個？

19. Alice has 15 \$1 and \$2 coins altogether. He has \$25 in total. How many \$1 coin(s) does she have?

愛麗絲有 1 元和 2 元硬幣共 15 個，合共 25 元。問愛麗絲有多少個 1 元硬幣？

20. How many 2-digit number(s) is / are there such that the number does not contain digit "0"?

有多少個不包含數位 0 的兩位數？

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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請將答案寫在 答題紙 上。

All answers should be written on the ANSWER SHEET.

~ 全卷完 ~

~ End of Paper ~

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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