



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：90 分鐘

Time allowed: 90 minutes

模擬試題

Mock 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 5 題，共 25 題，每題 4 分，總分 100 分，答錯不扣分。

There are 5 exam areas and 5 questions in each exam area. There are a total of 25 questions in this Question-Answer Book. Each carries 4 marks. Total score is 100 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.

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填空題 (第 1 至 25 題) (每題 4 分, 答錯及空題不扣分)

Open-Ended Questions (1st ~25th) (4 points for correct answer, no penalty point for wrong answer)

Logical Thinking

邏輯思維

1. What is the value of the number to represent “?” in the following sequence?

求在以下數列中 ? 代表數字的值。

2, 6, 12, 20, 30, ? , 56, 72, ...

2. The sum of father's and mother's ages is 84. If the age of father 5 years ago is the same as the age of mother 3 years later, how old is father now?

爸爸和媽媽現在的年齡和是 84。如果爸爸 5 年前的年齡與媽媽 3 年後的年齡相同，那麼爸爸今年多少歲？

3. A stationery store had a batch of ball pens. One half and 7 more pens were sold on the first day. One half of the remaining part but 4 fewer pens were sold on the second day. Finally 18 ball pens are left. How many ball pen(s) did the stationery store have originally?

文具店有一批原子筆，第一天賣掉了總數的一半多 7 支，第二天則賣掉剩下的一半少 4 支，最後剩下 18 支。那麼文具店原有多少支原子筆？

4. 7th May is Monday. Which day of the week is 5th August in the same year?

5 月 7 日是星期一，同一年的 8 月 5 日是星期幾？

5. There are a total of 34 chickens and rabbits in a farm. The animals have a total of 96 legs. How many chicken(s) is / are there?

農場裡有雞和兔共 34 隻，共有 96 條腿。那麼雞有多少隻？

Arithmetic

算術

6. Find the value of $1+2+3+\dots+59+60$.

求 $1+2+3+\dots+59+60$ 的值。

7. Find the value of $333\times 333+111$.

求 $333\times 333+111$ 的值。

8. Find the value of $14\times 14+2\times 14\times 86+86\times 86$.

求 $14\times 14+2\times 14\times 86+86\times 86$ 的值。

9. Find the value of $11\times 10-10\times 9+9\times 8-8\times 7+7\times 6-6\times 5+5\times 4-4\times 3+3\times 2-2\times 1$.

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.

求 $11 \times 10 - 10 \times 9 + 9 \times 8 - 8 \times 7 + 7 \times 6 - 6 \times 5 + 5 \times 4 - 4 \times 3 + 3 \times 2 - 2 \times 1$ 的值。

10. Find the value of $3 + 7 + 11 + \dots + 55 + 59$.

求 $3 + 7 + 11 + \dots + 55 + 59$ 的值。

Number Theory

數論

11. If 9-digit number $\overline{20180901A}$ is divisible by 18, find the value of A .

若 9 位數 $\overline{20180901A}$ 可被 18 整除，求 A 的值。

12. Find the unit digit of A if $A = \underbrace{2 \times 2 \times 2 \times \dots \times 2}_{2018's} \times \underbrace{3 \times 3 \times 3 \times \dots \times 3}_{88's}$.

若 $A = \underbrace{2 \times 2 \times 2 \times \dots \times 2}_{2018's} \times \underbrace{3 \times 3 \times 3 \times \dots \times 3}_{88's}$ ，求 A 的個位數的值。

13. How many factors does 196 have?

196 有多少個因數？

14. The difference of positive numbers A and B is 324. A is 3 times of B . Find the value of A .

兩個正整數 A 、 B 之差是 324， A 比 B 大 2 倍。求 A 的值。

15. How many 2-digit numbers are neither divisible by 2 nor divisible by 3?

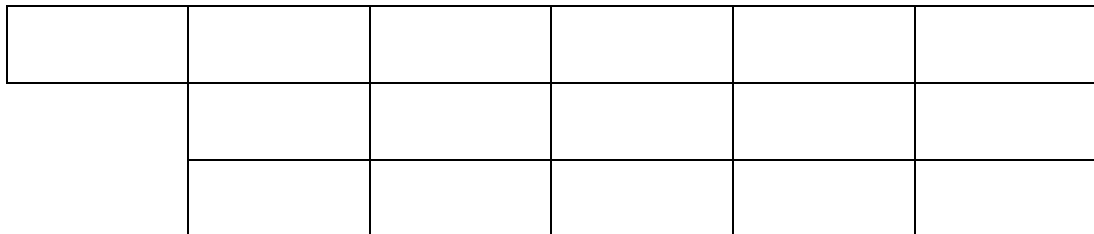
有多少個兩位數不是 2 的倍數也不是 3 的倍數？

Geometry

幾何

16. How many rectangle(s) is / are there in the figure below?

請問下圖有多少個長方形？



Question 16

第 16 題

17. The area of a rectangle is 48cm^2 . If sides of the rectangle are integers, how many different value(s) of perimeter of rectangle is/are there?

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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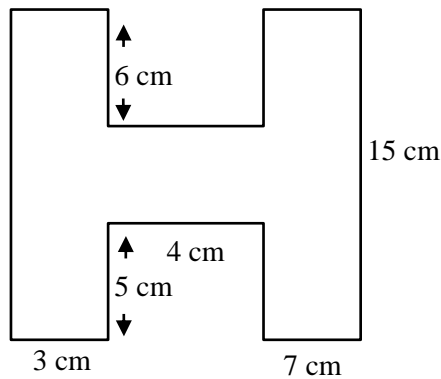
請將答案寫在 **答題紙** 上。

All answers should be written on the ANSWER SHEET.

一個矩形的面積為 48 厘米，邊長是整數，矩形的周界有多少個不同可能值？

18. Find the perimeter of the figure shown below in cm.

求下圖的周界。(以厘米表示答案)



Question 18

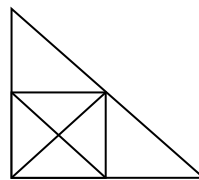
第 18 題

19. The perimeter of an equilateral triangle is 30cm. Now Andy uses 4 triangles to form a larger triangle. What is the perimeter of the large triangle in cm?

一個等邊三角形的周界為 30 厘米，現時安迪使用 4 個三角形來組成一個較大的三角形，求較大的三角形周界。(以厘米表示答案)

20. How many right-angled triangle(s) is / are there in the figure below?

下圖中有多少個直角三角形？



Question 20

第 20 題

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Combinatorics

組合數學

21. Amy draws all triangles which perimeter is 14cm and length of sides are integers. How many different types of triangle(s) does she draw? (triangles with sides (3,5,6) and (5,3,6) are regarded as the same type of triangle)

艾美畫了所有周界為 14 厘米，且邊長為整數的三角形。問她共畫了多少種不同的三角形？（邊長 (3,5,6) 和 (5,3,6) 被視為同 1 種三角形）

22. Two boys Bobby, Benny and three girls Grace, Gloria, Gaile are to be seated in a row according to the rule that a boy will not sit next to another boy and a girl will not sit next to another girl. Find the number of the combination(s) satisfying the above condition.

兩名男孩波比、賓利和三名女孩麗思、歌莉亞、嘉儀就坐一排座位，並滿足「男孩不會坐在另一名男孩旁邊及女孩不會坐在另一名女孩旁邊」的條件。求滿足上述條件的排列數目。

23. At least how many of 119 children that were born in the same month?

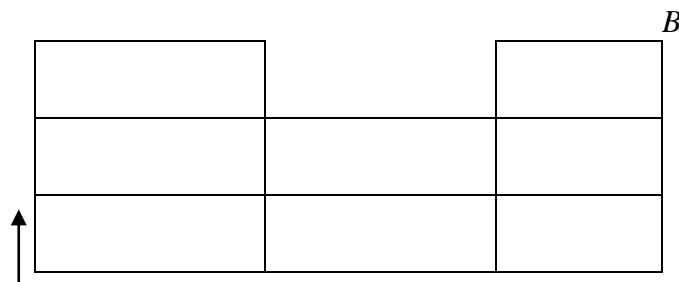
119 個小孩之中最少有多少個是在同一個月份出生？

24. How many 2-digit number(s) is / are there such that the number does not contain digit “7” and no digits are repeated?

有多少個不包含數位 7 且沒有重複數位的兩位數？

25. If Andy goes from point A to point B, each step can only move up or move right. How many way(s) is / are there?

如果安迪從 A 點走到 B 點，每步只能向上或向右走，共有多少種走法？



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All answers should be written on the ANSWER SHEET.

A \longrightarrow

Question 25

第 25 題

~ 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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