

第四屆全港小學數學挑戰賽(2017-2018)
The 4th Hong Kong Primary Mathematics Challenge (2017-2018)

初賽 (二零一七年十二月二日)
 Semi-Final (2nd December, 2017)

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 45 分鐘內完成所有題目。
 Contestants should finish all questions in this 45-minutes 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.

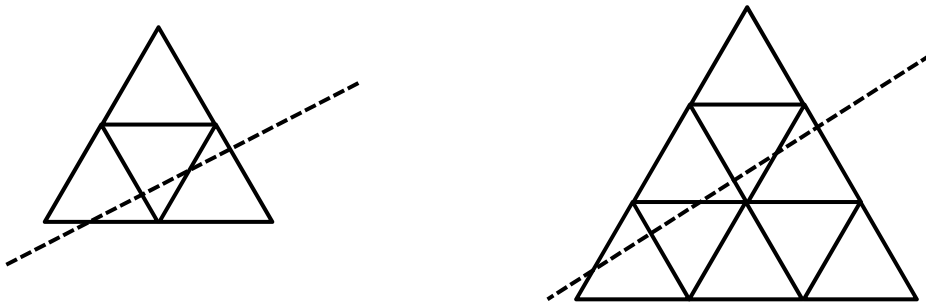
時限：四十五分鐘
Time Allowed: 45 minutes

總分：100
Total marks: 100

1. 計算 $1\frac{1}{2} + 2\frac{1}{6} + 3\frac{1}{12} + 4\frac{1}{20} + 5\frac{1}{30} + 6\frac{1}{42} + 7\frac{1}{56} + 8\frac{1}{72} + 9\frac{1}{90} + 10\frac{1}{110}$ 。 (2分)
Evaluate $1\frac{1}{2} + 2\frac{1}{6} + 3\frac{1}{12} + 4\frac{1}{20} + 5\frac{1}{30} + 6\frac{1}{42} + 7\frac{1}{56} + 8\frac{1}{72} + 9\frac{1}{90} + 10\frac{1}{110}$. (2 marks)
2. 計算 $\left(1 - \frac{1}{2} + \frac{2}{3} - \frac{3}{4} + \frac{4}{5}\right) \times 120$ 。 (2分)
Evaluate $\left(1 - \frac{1}{2} + \frac{2}{3} - \frac{3}{4} + \frac{4}{5}\right) \times 120$. (2 marks)
3. 已知 $m \times n = 420$ ，而 m 、 n 為正整數。求 $m + n$ 的最小值。 (3分)
It is given that $m \times n = 420$, where m, n are positive integers.
Find the smallest value of $m + n$. (3 marks)
4. 求首二十個質數之和。 (3分)
Find the sum of the first 20 prime numbers. (3 marks)
5. 有一個長方形，長是 3cm，闊是 6cm。另有一個三角形，底是 4.5cm。如果它們的面積相等，問該三角形的高是多少？ (3分)
A rectangle has length 3cm and width 6cm. Another triangle has base 4.5cm.
If their areas are equal, what is the height of the triangle? (3 marks)
6. 六個正整數之和是 18，求它們乘積的最大可能值。 (4分)
The sum of six positive numbers is 18, find their largest possible product. (4 marks)
7. 求 $1 - 2 + 3 - 4 + 5 - 6 + 7 - 8 \dots + 2015 - 2016 + 2017$ 的值。 (4分)
Find the value of $1 - 2 + 3 - 4 + 5 - 6 + 7 - 8 \dots + 2015 - 2016 + 2017$. (4 marks)
8. 瑪麗到書店購買一套分上、下兩集的書。如果她只買 30 本上集或 20 本下集，她所帶的現金剛好足夠支付。問她最多可以買多少套書？ (4分)
Mary went to a book shop to buy a set of books which consisted of two volumes (Volume One and Volume Two). If her money can only pay for 30 copies of Volume One or 20 copies of Volume Two. How many set of books could she buy at most? (4 marks)

9. 下圖中，若一個大三角形由 4 個細三角形組成，則畫一條直線最多可以穿過當中 3 個細三角形。若一個大三角形由 9 個細三角形組成，則畫一條直線最多可以穿過當中 5 個細三角形。若現有 25 個細三角形組成一個大三角形，問畫一條直線最多可以穿過當中多少個細三角形？ (4 分)

In the following figure, if a big triangle is formed by joining 4 small triangles together, then a straight line can pass through 3 of them at most. If a big triangle is formed by joining 9 small triangles together, then a straight line can pass through 5 of them at most. If there are 25 small triangles join together to form a big triangle, how many of them will be passed through by a straight line?. (4 marks)



10. 求 $1 \times 3 \times 5 \times \dots \times 2015 \times 2017$ 的個位數字。
Find the unit digit of $1 \times 3 \times 5 \times \dots \times 2015 \times 2017$. (5 分) (5 marks)
11. 求 $2 + 9 + 16 + 23 + \dots + 100$ 的值。
Find the value of $2 + 9 + 16 + 23 + \dots + 100$. (5 分) (5 marks)
12. 一生果店共有 108 個蘋果和 72 隻香蕉，今天賣出了蘋果和香蕉各 36 個，問今天賣出生果的百分率是多少？
There were totally 108 apples and 72 bananas in a fruit store. 36 of each were sold today. What percentage of fruit was sold today? (5 分) (5 marks)
13. 一個長方形的周界是 170 厘米，而它的長比闊的兩倍短 5 厘米。這個長方形的長是多少厘米？
A rectangle has a perimeter of 170 cm. Its length is 5 cm shorter than twice the width. What is the length of the rectangle in centimeters? (5 分) (5 marks)
14. 求 480 的正因數之和。
Find the sum of all positive factors of 480. (5 分) (5 marks)
15. 設 $\frac{a}{15}$ 、 $\frac{b}{35}$ 及 $\frac{c}{36}$ 為三個最簡分數。已知這三個分數的積是 $\frac{1}{3}$ ，求 a 、 b 、 c 的值。
Suppose $\frac{a}{15}$, $\frac{b}{35}$ and $\frac{c}{36}$ are three fractions in their simplest form. Given that the product of these three fractions is $\frac{1}{3}$, find the values of a , b and c . (6 分) (6 marks)

