

第五屆全港小學數學挑戰賽(2018-2019)
The 5th Hong Kong Primary Mathematics Challenge (2018-2019)

初賽 (二零一八年十二月一日)
 Semi-Final (1st December, 2018)

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 $1+8+15+22+\dots+99$ 。
Evaluate $1+8+15+22+\dots+99$. (1 分)
(1 mark)
2. 一包糖果被吃去 20% 後，還剩下 60 粒，該包糖果原有多少粒？
After eating 20% of a bag of candies, there are 60 candies left. How many candies were there in the bag at first? (1 分)
(1 mark)
3. 長方體水箱長 0.8 m，闊 0.5 m，高 0.4 m，已裝有 16 cm 深的水。若放入 5 塊鐵片後，水位上升了 10 cm，問每塊鐵片的體積是多少 cm^3 ？
A rectangular water tank is 0.8 m long, 0.5 m wide and 0.4 m tall. The depth of water in the tank is 16 cm. If 5 iron plates are put into the water tank, the water level will rise 10 cm. What is the volume of each iron plate in cm^3 ? (2 分)
(2 marks)
4. 若兩個正整數之積是 333，它們之和的最小可能值是甚麼？
If the product of two positive integers is 333, what is the smallest possible value of their sum? (2 分)
(2 marks)
5. 計算 $2017 \times 2019 - 2018 \times 2018 + 2019 \times 2018 - 2020 \times 2017$ 。
Evaluate $2017 \times 2019 - 2018 \times 2018 + 2019 \times 2018 - 2020 \times 2017$. (3 分)
(3 marks)
6. 求 $1+11+111+1111+\dots+\underbrace{111\dots111}_{2018}$ 的最後的四位數。
Find the last four digits of $1+11+111+1111+\dots+\underbrace{111\dots111}_{2018}$. (3 分)
(3 marks)
7. 將 2、3 和 4 組成不同的三位數(所有數字不能重覆使用)，求這些三位數之和。
Find the sum of all different 3-digit numbers formed by 2, 3 and 4 (all digits cannot be repeated). (4 分)
(4 marks)
8. 計算 $\frac{1}{2} + \frac{1}{6} + \frac{1}{12} + \frac{1}{20} + \dots + \frac{1}{110}$ 。
Evaluate $\frac{1}{2} + \frac{1}{6} + \frac{1}{12} + \frac{1}{20} + \dots + \frac{1}{110}$. (4 分)
(4 marks)
9. 求以下算式中各英文字母可代表的數字(0-9)。每個英文字母均代表不同的數字。
Find the digits (0-9) represented by the different letters in the following calculation. Each letter represents a different number. (7 分)
(7 marks)

$$\begin{array}{r}
 \text{C R A C K} \\
 + \quad \text{H A C K} \\
 \hline
 \text{E R R O R}
 \end{array}$$

10. 某個數學比賽有 45 條必答題目，每做對一題得 8 分，每做錯一題倒扣 5 分。一位學生最終得到 256 分，問他做對了多少題？ (5 分)

In a mathematics competition, there are 45 compulsory questions. 8 marks will be given for each correct answer while 5 marks will be deducted for each wrong answer.

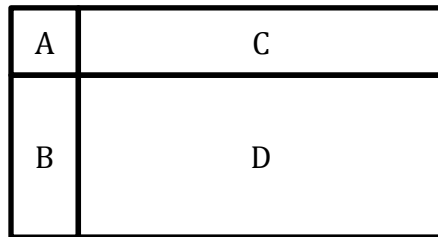
If a student gets 256 marks from the competition, what is the number of correct answers the student has? (5 marks)

11. 學校推出四款面值分別為 \$10, \$15, \$25, \$40 的購物券。陳老師買了共 30 張購物券，其中兩款購物券各買了 5 張，另外兩款購物券各買了 10 張。她用了 x 張 \$100 紙幣買這些購物券。求 x 的值。 (5 分)

A school issues four types of coupons with values \$10, \$15, \$25, \$40 respectively. Miss Chan bought 30 coupons, where 5 coupons each from two types of value and 10 coupons each from the other two types of value. She used x pieces of \$100 notes to buy these coupons. Find the value of x . (5 marks)

12. 如下圖，A 是一個正方形。長方形 B 的周界是正方形 A 的兩倍，長方形 C 的周界是正方形 A 的四倍，長方形 D 的周界是正方形 A 的 x 倍。求 x 的值。 (6 分)

In the following figure, A is a square. The perimeter of rectangle B is twice that of square A. The perimeter of rectangle C is four times that of square A and the perimeter of the rectangle D is x times that of the square A. Find the value of x . (6 marks)

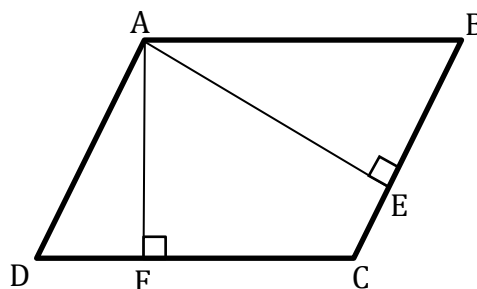


13. 現有三瓶體積相同的酒精，它們的濃度分別是 12%、18% 和 72%。若把三瓶酒精混合起來，濃度為 $x\%$ 。求 x 。 (6 分)

There are three bottles of alcohol of the same volume, their concentrations are 12%, 18% and 72% respectively. When these three bottles are mixed together, the concentration is $x\%$. Find x . (6 marks)

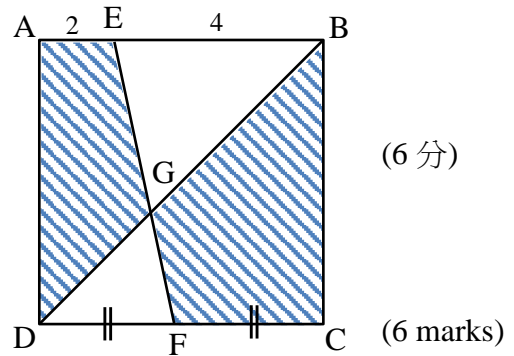
14. 已知一平行四邊形 ABCD 的周界為 80cm，且 $AE = 9\text{ cm}$ 及 $AF = 7\text{ cm}$ 。求該平行四邊形的面積。 (6 分)

It is given that the perimeter of a parallelogram ABCD is 80cm, with $AE = 9\text{ cm}$ and $AF = 7\text{ cm}$. Find the area of the parallelogram. (6 marks)



15. 圖中 $ABCD$ 為正方形， $AE = 2$ ， $EB = 4$ 和 $DF = FC$ ，求陰影部份的面積。
(提示： $\triangle BEG$ 與 $\triangle DFG$ 的高度比例與底的比例相同。)

In the given figure, $ABCD$ is a square. $AE = 2$, $EB = 4$ and $DF = FC$. Find the area of the shaded part.
(Hint : The heights of $\triangle BEG$ and $\triangle DFG$ are of the same ratio as their bases.)

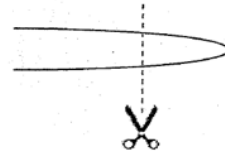


16. 某兩位數的數值等於它的十位數字與個位數字的平方之和，求這兩位數。
(已知 a 的平方是 $a^2 = a \times a$)

A two-digit number is equal to the sum of its ten digit plus the square of its unit digit (The square of a number a is given by $a^2 = a \times a$). Find this number. (7 分) (7 marks)

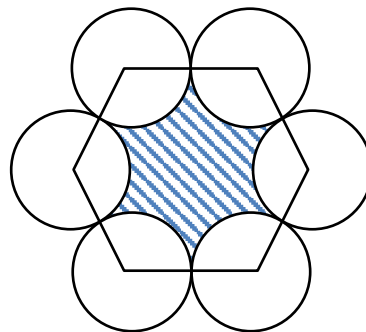
17. 將一根 1m 長的線對摺 6 次，然後從中間剪斷，那麼這根線被剪成了多少段？

If a rope of length 1 m is folded into half 6 times, then cut in the middle. How many segments of rope are formed?



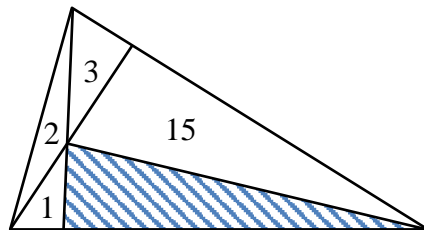
18. 右圖是由一個正六邊形的頂點為圓心畫出六個相等的圓而成，若正六邊形的邊長為 14 cm，求圖中陰影部份的周界。(取 $\pi = \frac{22}{7}$)

The figure is constructed by using the vertices of a regular hexagon as the centre to draw six identical circles. If the length of each side of the regular hexagon is 14 cm, find the perimeter of the shaded region in the figure. (Take $\pi = \frac{22}{7}$)



19. 下圖的大三角形被分成 5 個小三角形，其中 4 個小三角形的面積已標記在圖中，那麼陰影部份的面積是多少？

The big triangle is divided into 5 smaller triangles. The area of four smaller triangles are labelled in the diagram. What is the area of the shaded part? (9 分) (9 marks)



20. 中午 12 時之後，時針和分針下一次相遇的時間是什麼？答案須準確至整秒。(9 分)

After 12:00 noon, when will the hour-hand and minute-hand of a clock meet again? Correct the time to the nearest second. (9 marks)

試卷完 END OF PAPER