

第二屆全港小學數學挑戰賽(2015-2016)
The 2nd Hong Kong Primary Mathematics Challenge (2015-2016)

初賽 (二零一五年十二月五日)
Semi-Final (5th December, 2015)

小六組 組別項目 試卷
Primary 6 Group 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：400
Total marks: 400

1. 在 200 至 300 之間有多少個質數？ (19 分)
How many prime numbers are there from 200 to 300? (19 marks)

2. 當 1000 被正整數 A 除時，其餘數是 4。問 A 的可能值共有多少個？ (16 分)
When 1000 is divided by a positive integer A, the remainder is 4.
How many possible values of A? (16 marks)

3. 有五個不同的數字。任意兩數之和的結果可能如下。求這五個數字。 (18 分)
There are five different numbers. The sum of any two numbers are listed below.
Find these five numbers. (18 marks)
2, 3, 4, 4, 5, 5, 6, 6, 7, 8

4. 某三位數的所有質因數之和是 25，求該數的最大值。 (22 分)
Find the largest 3-digit number such that the sum of all its prime factors is 25. (22 marks)

5. 某數學比賽滿分是 100 分，若前五名參賽同學的平均得分是 88 分，排第五名同學的得分是 75 分，且每人得分是互不相同的整數，問排第三名的同學最少得多少分。 (22 分)
The full mark of a mathematics contest is 100. The average of the candidates in the first 5 positions is 88. The candidate in the 5th position scores 75 and the candidates all get different integral scores. What is the minimum score of the candidate in the 3rd position. (22 marks)

6. 從五名同學參加比賽，選出冠、亞及季軍，有多少個可能情況？ (23 分)
Five students join a competition. How many choices are there for selecting the champion, first runner-up and second runner-up? (23 marks)

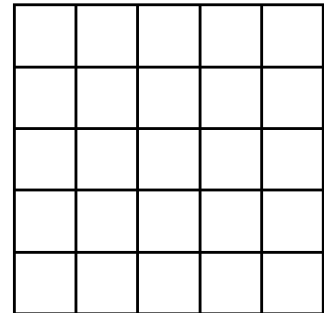
7. 在以下算式中， A 、 B 、 C 、 D 、 E 、 F 、 G 、 H 及 I 分別代表 1 至 9 之間不同的整數。
 In the following expression, A , B , C , D , E , F , G , H and I represent 9 different integers among 1 to 9 respectively.

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 \end{array}$$

求 A 、 B 、 C 、 D 、 E 、 F 、 G 、 H 及 I 。(只需提供一組答案) (24 分)
 Find A , B , C , D , E , F , G , H and I . (1 set of answer is required) (24 marks)

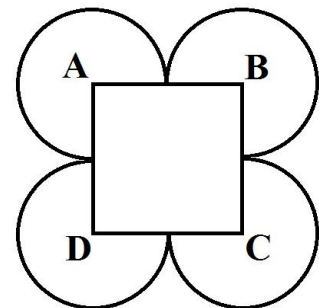
8. 圖中方格由 25 個邊長為 1 單位的正方形組成，在以下方格中繪畫一個面積為 17 平方單位的正方形。(23 分)
 The following grid is formed by 25 squares of side 1 unit. Draw a square on the grid with area 17 sq. units. (23 marks)



9. 將一個蛋糕分給A和B二人。A得到該蛋糕的四分之三，而B得到其餘部份。如果A將她所得的蛋糕的 100 g 送給B，則A所得的是B所得的兩倍。求這蛋糕的重量。(29 分)

A cake is shared between April and Betty. April gets $\frac{3}{4}$ of the cake and Betty gets the remaining part. If April gives 100g to Betty, April's share will be two times of Betty's. Find the weight of the cake. (29 marks)

10. 圖中的正方形邊長為 4cm，四等弧的圓心分別為 A 、 B 、 C 、 D ，求弧的總長度。(π 以 3.14 計算) (32 分)
 In the figure, the length of the square is 4cm, the centers of the four equal arcs are A , B , C and D respectively. Find the total length of the arcs. (Let $\pi = 3.14$) (32 marks)



11. 一天，有一位顧客在一個小販攤檔看中一件飾物。該飾物的成本是 \$ 150，零售價為 \$ 210。顧客取出一張 500 元紙幣購買，但小販未夠零錢，於是請隔鄰的小店店主幫忙。那店主便收了那 500 元紙幣，給了小販 5 張 100 元紙幣。小販便將 \$ 290 找給顧客。後來小店店主發覺 500 元乃偽鈔，於是與小販理論，小販無奈地賠償 500 元給小店。問在這項交易中，小販損失了多少錢？ (27 分)

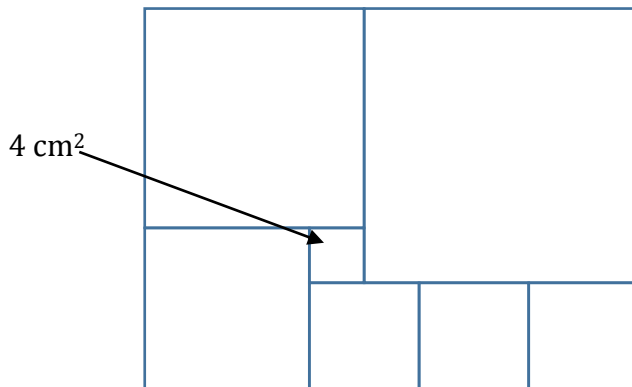
One day, a customer bought an ornament from a hawker. The cost of the ornament was \$150 and the selling price was \$210. The customer paid a \$500-note, but the hawker did not have enough change. So the hawker asked the shopkeeper of a nearby shop for help. The shopkeeper took the \$500-note, and gave five \$100-notes to the hawker. The hawker then gave the \$290 change to the customer.

Later, the shopkeeper found that the \$500-note was counterfeit, and asked the hawker to be responsible for the loss. As a result, the hawker reluctantly paid the shopkeeper \$500.

How much money did the hawker lose in this transaction? (27 marks)

12. 圖中的長方形由七個正方形組成，最小的正方形面積是 4cm^2 ，求長方形面積。 (36 分)

In the figure, the rectangle is composed of 7 squares, the area of the smallest square is 4cm^2 , find the area of the rectangle. (36 marks)



13. 一個生日會裏，小丑帶來了 6 袋汽球（每袋有相同數目的汽球）。如果他從每個袋中取走 10 個汽球，則餘下的汽球數目總數等於原來兩個袋的汽球數目之和，問原本共有多少個汽球？ (32 分)

In a birthday party, a clown brought 6 bags of balloons (all bags contain the same number of balloons). If he took 10 balloons from each bag, the total number of balloons left is equal to 2 bags of balloons in the beginning. How many balloons in total are there in the beginning?

(32 marks)

14. 如圖所示，由入口開始，需依循以下條件填上數字 1, 2, 3, 1, 2, 3, 1, 2, 3 …… :

條件(1) : 沿著蝸牛路徑，順序重複填上 1, 2, 3...

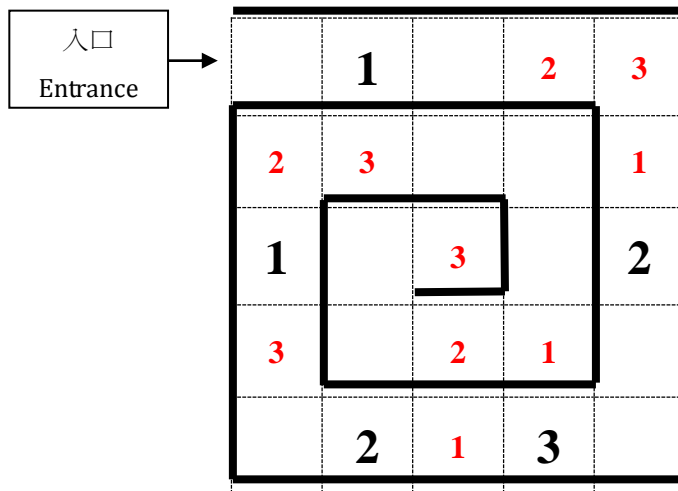
條件(2) : 每行和每列必須有且只有一個 1，一個 2 和一個 3。

In the figure, starting at the entrance, follow the two rules below to write the numbers 1, 2, 3, 1, 2, 3, 1, 2, 3 :

Rule (1) : Starting at the entrance, write the numbers in the order of repeating 1, 2, 3 ..., following the snail path.

Rule (2) : In each row and column, there is exactly one 1, one 2 and one 3.

(例子) Example

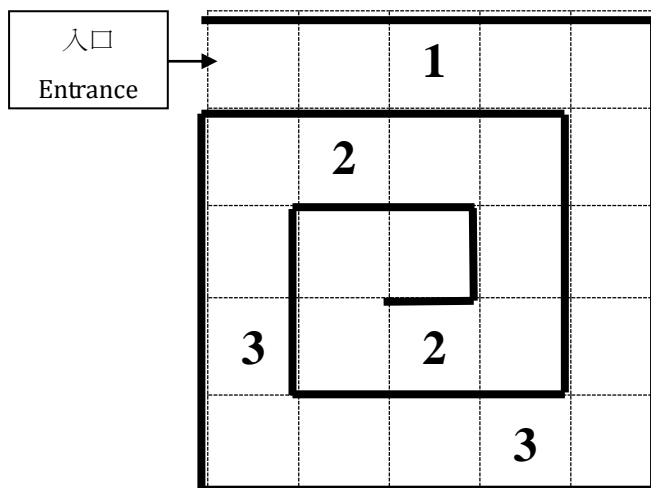


基於上述的條件，請完成下圖。

(38 分)

Finish the following diagram by following the above rules.

(38 marks)



15. 老師在桌子上放出三個盒子，其中一個盒子內放著一粒糖果，接著老師在每個盒子上各寫著三句文字描述。

盒子 A: (A1) 糖果在盒子 A。

(A2) 該糖果是棉花糖。

(A3) 糖果不在盒子 C。

盒子 B: (B1) 該糖果是棉花糖。

(B2) 糖果在盒子 B。

(B3) 該糖果是朱古力味。

盒子 C: (C1) 糖果在盒子 A。

(C2) 該糖果不是朱古力味。

(C3) 盒子丙有糖果的香味。

已知每個盒子皆有兩句正確和一句錯誤的文字描述，請在答案紙中圈出錯誤的句子，從而判斷糖果放在哪個盒子？ (39 分)

A teacher puts three boxes on the table, only one of them contains a candy, then he writes down three descriptions on each boxes.

Box A: (A1) The candy is in box A.

(A2) The candy is a cotton candy.

(A3) The candy is not in box C.

Box B: (B1) The candy is a cotton candy.

(B2) The candy is in box B.

(B3) The candy is chocolate flavour.

Box C: (C1) The candy is in box A.

(C2) The candy is not chocolate flavour.

(C3) Box C has some candy smell.

It is known that two correct and one incorrect description are written for each box.

Please circle the incorrect descriptions on the answer sheet, then find out which box contains the candy. (39 marks)

試卷完 END OF PAPER