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)

小五組	組別項目	試卷
Primary 5	**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. 在一袋糖果中，士多啤梨糖佔 20%，橙糖佔 55%，其餘是檸檬糖；已知士多啤梨糖及檸檬糖合共有 36 顆，問該袋糖果共有多少顆？ (14 分)
   In a pack of candies of mixed tastes, 20 % of the candies are strawberry, 55% of the candies are orange and the remaining candies are lemon. It is known that there are 36 candies of strawberry and lemon in the pack. Find the total number of candies in the pack. (14 marks)

2. 定義 $a \oplus b = 2a + 3b - 4$。若 $2 \oplus y = 2016$，求 y。 (15 分)
   Define $a \oplus b = 2a + 3b - 4$. If $2 \oplus y = 2016$, find y. (15 marks)

3. 外婆有 20 只雞蛋，還養了一天能生一只蛋的母雞，如果她一天吃兩只雞蛋，外婆的雞蛋可以連續吃多少天？ (17 分)
   Grandma had 20 eggs. She also had a hen which lays one egg every day. If she eats two eggs a day, how many days will grandmother take to finish all the eggs? (17 marks)

4. 某學校組織一個旅行團，參加人數共 85 人。其中 68 人帶了麵包，56 人帶了水果，14 人甚麼也沒帶。求同時帶了麵包和水果的有多少人？ (19 分)
   A school organized a picnic for 85 students. It is found that 68 students bring bread, 56 students bring fruit and 14 students do not bring anything. Find the number of students who bring both bread and fruit? (19 marks)

5. 以下是一組正方形數列的首三項，若彼得只有 700 點以組成最大的正方形，問他所組成的正方形在這數列是第幾項? (19 分)
   The following is the first three terms of a square sequence. Suppose Peter has 700 dots and wants to form the largest square. Which term in the sequence does that square belong to? (19 marks)

The 1st term   The 2nd term   The 3rd term
第 1 項   第 2 項   第 3 項

組別項目 Group Event
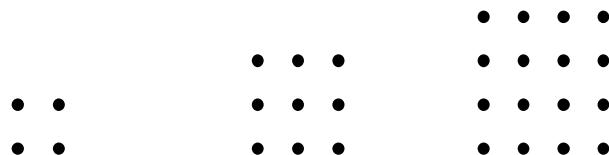
6. 一班 50 個學生中，他們的上衣是藍色或紅色，褲子是白色或黑色。 若 14 人穿藍色上衣及白褲子， 31 人穿黑褲子， 18 人穿紅上衣，求穿紅上衣黑褲子的學生數目。

    (22 分)

    In a group of 50 students, their shirts are either blue or red while their trousers are either white or black. If 14 students wear blue shirts with white trousers, 31 students wear black trousers and 18 students wear red shirts, find the number of students wearing red shirts with black trousers. (22 marks)

7. 在一次選舉中，五位候選人共獲得 320 張選票，獲勝者比其他四位候選人分別多得 9、13、18 和 25 張選票。求獲勝者所得票數。 (22 分)

    In an election, there are five candidates. The total number of votes of the 5 candidates is 320 . The differences of the number of votes between the winner and the other 4 candidates are 9 , 13 , 18 and 25 respectively.
    Find the number of votes that the winner obtains. (22 marks)

8. 大衛每隔三星期理髮一次，彼得每隔 27 天理髮一次。已知大衛在 4 月 1 日理髮，彼得在 4 月 7 日理髮。那麼，他們將會在該年的那月那日同一天理髮？ (23 分)

    David cuts his hair in every three weeks and Peter cuts his hair in every 27 days. Given that David cuts his hair on 1st of April while Peter cuts his hair on 7th of April.
    Find the date in this year that they will cut their hair on the same day. (23 marks)

9. 求 $7^1 + 7^2 + 7^3 + \cdots + 7^{2015}$ 的個位數字。 (26 分)

    Find the unit digit of $7^1 + 7^2 + 7^3 + \cdots + 7^{2015}$. (26 marks)

10. 某長方形各邊的長度都是整數，且其面積為 48 。求長方形周界的最小可能值。

    (25 分)

    The area of a rectangle with integral side lengths is 48 . Find the smallest possible value of its perimeter. (25 marks)

11. 把紅、黃、黑、綠、藍 及 紫 六種顏色填入圖中校徽的三個區域內。若每種顏色只可填一次，而每個區域填上不同的顏色。求有多少種不同的填色方法？ (27 分)

    Six colours, red, yellow, black, green, blue and purple are used to colour the three different regions of the badge shown. How many different ways can the badge be coloured if each colour is used once and each region is different colour? (27 marks)


3
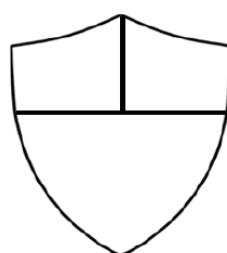
12. 求首 10000 個 3 的倍數的和除以 7 的餘數。 (29 分)
    Find the remainder when the sum of the first 10000 multiples of 3 is divided by 7.
    (29 marks)

13. 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? (31分)
    When 1000 is divided by a positive integer A , the remainder is 4 .
    How many possible values of A ? (31 marks)

14. 在某次大抽獎中，獎品包括鉛筆、圓珠筆和鋼筆共 232 支，價值 10000 元。已知每支
    鉛筆價值 20 元，每支圓珠筆價值 90 元，每支鋼筆價值 210 元。若鉛筆的數量是圓珠
    筆的的 4 倍，問 3 種筆各有多少支? (35 分)
    In a lucky draw, the prizes are pencils, ball pens and fountain pens. The total number of pens
    are 232 and the cost are $10000. It is known that the cost of a pencil, a ball pen and a fountain
    pen are $20, $90 and $210 respectively. If the number of pencil is four times of ball pen, find
    the number of pencil, ball pen and fountain pen respectively. (35 marks)

15. 四款郵票面值分別為 $1、$3、$5、$6。現郵寄一件包裹，郵費為 $20，共有多少種郵票
    組合可剛好支付郵費? (36 分)
    There are 4 types of stamps, their values are $1, $3, $5 and $6 respectively. How many
    combinations of stamps can we pay the mailing fee of a parcel of $20 exactly? (36 marks)

16. 一堆積木的構建形式如下圖，第一層放置一粒，第二層放置三粒，第三層放置六粒。
    A stack of cubes are built in a way that there is one cube in the first layer, three cubes in the
    second layer, six cubes in third layer, as shown in the figure.

Stack 1 第一堆   Stack 2 第二堆   Stack 3 第三堆
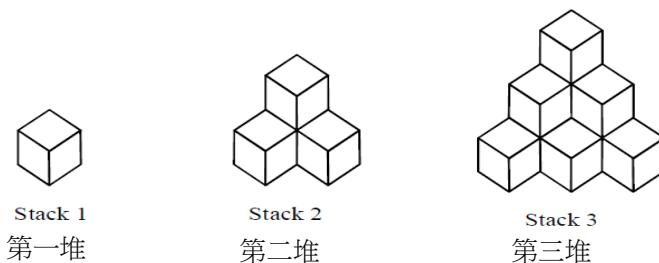
當正視著這些積木，發現第一堆有 9 條邊，第二堆有 24 條邊。求
(a) 第三堆有多少條邊? (b) 第二十堆有多少條邊? (40 分)
    When these stacks are viewed as shown, 9 edges are visible in the first stack and 24 edges
    are visible in the second stack. Find
(a) How many edges are visible in the third stack ?
(b) How many edges are visible in the 20th stack ? (40 marks)

試卷完 **END OF PAPER**