

第一屆全港小學數學挑戰賽 (2014-2015)
The First Annual Hong Kong Primary Mathematics Challenge (2014-2015)

決賽 (二零一五年三月廿八日)
Final (28th March, 2015)

小五組	組別項目	題目紙
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、隊伍編號、比賽試場、座位編號。
Write your name, class, admission number, team number, venue, 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 sheets 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 your working out.
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 in the form of fractions 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 risks 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. 如果 $\frac{a}{5} = \frac{b}{7} = \frac{c}{11}$ ，求 $\frac{5a+3b-2c}{a+b-c}$ 的值。 (25 分)
If $\frac{a}{5} = \frac{b}{7} = \frac{c}{11}$, find the value of $\frac{5a+3b-2c}{a+b-c}$. (25 marks)

2. 將 2015 減去它的 $\frac{1}{2}$ ，再減去餘下的 $\frac{1}{3}$ ，再減去餘下的 $\frac{1}{4}$ ，再減去餘下的 $\frac{1}{5}$ ，...依次類推，一直到最後減去餘下的 $\frac{1}{2015}$ ，最後剩下的數是多少？ (25 分)
If 2015 is subtracted by $\frac{1}{2}$ of its value, then subtracted by $\frac{1}{3}$ of the remainder, then subtracted by $\frac{1}{4}$ of the remainder and so on until it is subtracted by $\frac{1}{2015}$ of the remainder. Find the value after all the subtractions. (25 marks)

3. 某小學五十周年校慶(2015 年 5 月 1 日)是星期五，請問該小學七十年校慶(2035 年 5 月 1 日)是星期幾呢？ (30 分)
The 50th Anniversary of a primary school is on 1st May, 2015, Friday. What is the day of the week for the 70th Anniversary (1st May, 2035) of the school? (30 marks)

4. 有一由數字 0 或 1 組成的正整數，能被 225 整除，求最該數的最小值。 (30 分)
A positive number with digits consisting of 0 or 1 only is divisible by 225. Find the least possible value of this number. (30 marks)

5. 一個容器要注滿水需時二十分鐘，而若要把該容器的水完全地排空需時四十五分鐘。若該容器同時注水及排放水，問需要多少時間才能把該容器注滿水？ (25 分)
A tank can be filled to the top in 20 minutes. The drain can empty the tank in 45 minutes. If the tap is on and the drain is open, how long will the tank take to fill? (25 marks)

6. 把 $1 \times 2 \times 3 \times \dots \times 98 \times 99 \times 100$ 的積從個位開始點算，點算至第一個非零的數字，共有多少個零？ (30 分)
For the product $1 \times 2 \times 3 \times \dots \times 98 \times 99 \times 100$, count the number of zeros from the units digit to the first non-zero digit. (30 marks)

7. 火車從 A 站到 B 站行駛，需時 3 小時 30 分鐘。上午 6 時從兩站分別開出第一班列車，其後每隔 1 小時對開一列車。上午 9 時由 A 站開出的列車，途中會與幾輛火車相遇？ (40 分)
Trains go from station A to station B and arrive at station B after 3 hours and 30 minutes. At 6 a.m., the first train leaves from both stations, followed by other trains at 1-hour intervals. How many trains will the train leaving station A at 9 a.m. meet? (40 marks)

8. 五位小朋友 A 、 B 、 C 、 D 及 E 玩一種遊戲，當中每個人扮演青蛙或兔子，青蛙只說假話而兔子只說真話。

A 說 B 是兔子。

C 說 D 是青蛙。

E 說 A 不是青蛙。

B 說 C 不是兔子。

D 說 A 和 E 是不同動物。

5 人中有多少人扮演兔子？

(40 分)

5 students played a role-playing game, all of them play the role of either a frog or a rabbit. Frogs only tell lies and rabbits only tell the truth.

A said B is a rabbit.

C said D is a frog.

E said A is not a frog.

B said C is not a rabbit.

D said A and E are not the same kind of animal.

How many of them play the role of a rabbit ?

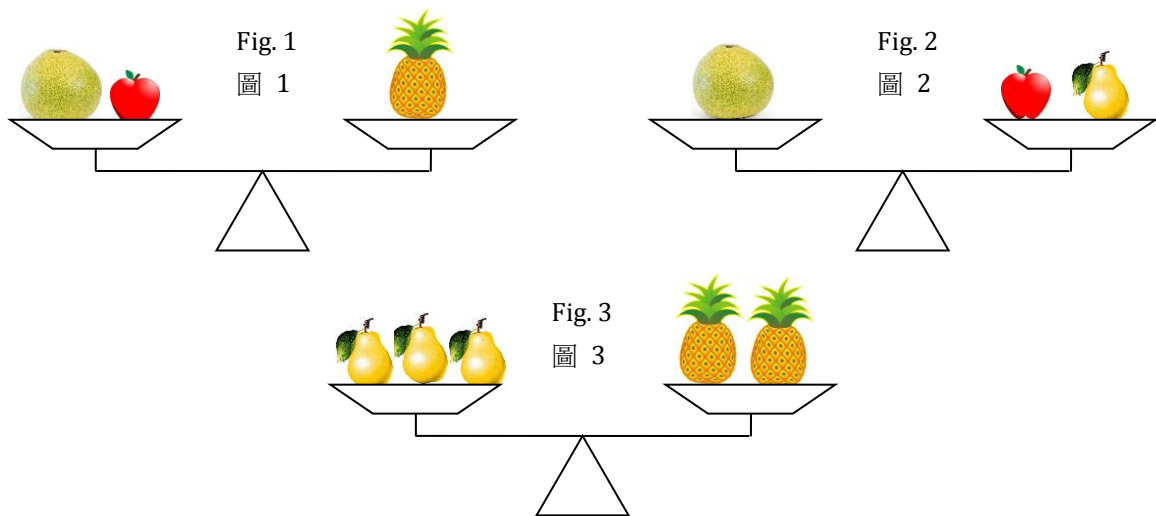
(40 marks)

9. 一個柚子和一個蘋果與另一邊的菠蘿的重量相同（圖一）。一個柚子與一個蘋果和一個梨子的重量相同（圖二）。兩個菠蘿與三個梨子的重量相同（圖三），那麼一個柚子和幾個蘋果重量相同？

(35 分)

In figure 1, one grapefruit and one apple have the same weight as one pineapple. In figure 2, one grapefruit has the same weight as one apple and one pear.

In figure 3, two pineapples have the same weight as three pears. How many apples have the same weight as a grapefruit? (35 marks)

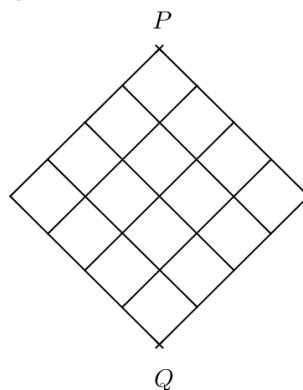


10. 如果只允許沿著圖中的路線向下移動，問從 P 點至 Q 點的路線共有多少條。

(40 分)

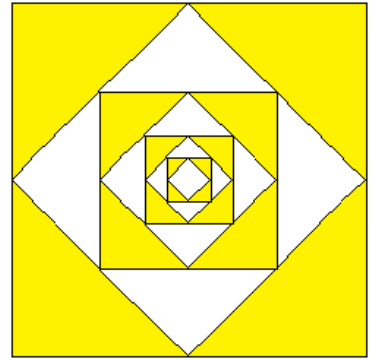
If you are only allowed to move downwards along the lines shown in the figure, how many different routes are there from point P to point Q ?

(40 marks)



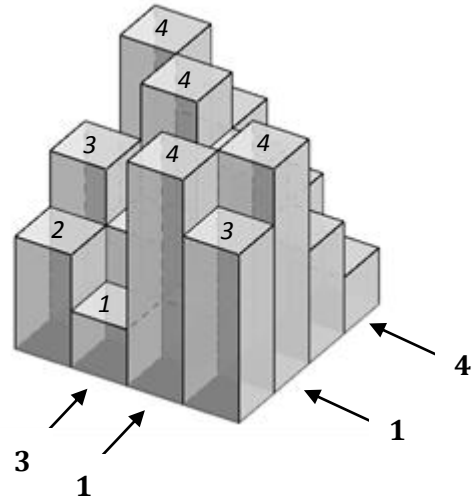
11. 圖中正方形四邊的中點相連可得較小的正方形，若最大的正方形的邊長為 16 cm，求陰影部份的面積。(30 分)

In the figure, each of the smaller squares is formed by joining the mid-points of the sides of a larger square. If the length of the side of the largest square is 16 cm, find the area of the shaded region. (30 marks)



- 12.

	1 ↓		3 ↓		
1 →	4	3	2	1	← 4
	1	4	3	2	
2 →	3	2	1	4	← 1
	2	1	4	3	
		3 ↑	1 ↑		



在以上 4×4 的方格中，1 至 4 分別代表高度為 1 至 4 的柱子。右圖表示其對應的立體圖像。方格外圍的數字表示沿箭號方向可看見多少根柱子(3 表示可看到 3 根不同高度的柱子、4 表示可看到 4 根不同高度的柱子，高的柱子會遮蓋較矮的柱子)。每一行或列 1、2、3、4 只會出現一次。
 In the above 4×4 table, 1 to 4 represents the pillar with height of 1 to 4 units respectively. The figure on the right side is the corresponding 3-dimensional diagram. The numbers surrounding the table tell you how many pillars you can see in the direction of the arrow. ('3' means 3 pillars with different heights can be seen, '4' means 4 pillars with different heights can be seen, you can't see a shorter pillar behind a taller one.) Every row/column contains 1 to 4 exactly once.

根據以上的規則，將 1 至 4 填入以下 4×4 的方格中。

(50 分)

According to the rules, fill 1 to 4 into the following 4×4 table.

(50 marks)

	1 ↓	4 ↓			
					← 2
2 →					← 1
					2 ↑

試卷完 END OF PAPER