

第三屆全港小學數學挑戰賽(2016-2017)
The 3rd Hong Kong Primary Mathematics Challenge (2016-2017)

決賽 (二零一七年四月一日)
Final (1st April, 2017)

小五組	組別項目	試卷
Primary 5	Group Event	Question Paper

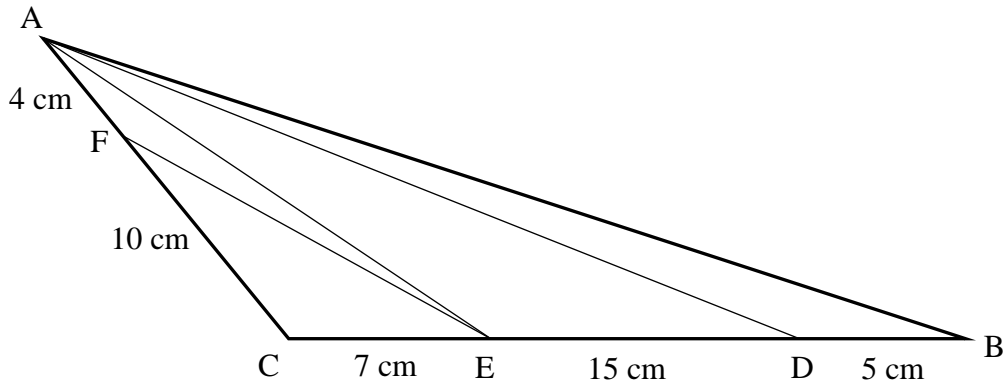
參賽者須知 Instructions to Contestants

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.

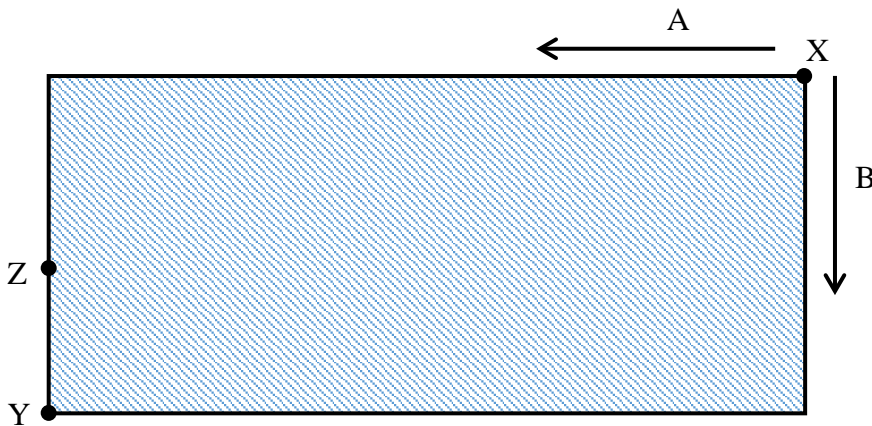
時限：四十五分鐘
Time Allowed: 45 minutes

總分：400
Total marks: 400

1. 下圖中，三角形 ABC 的面積是 108 cm^2 ，求三角形 AEF 的面積。 (14 分)
In the following figure, the area of the triangle ABC is 108 cm^2 . Find the area of the triangle AEF. (14 marks)



2. A 和 B 以不同的方向同時在長方形操場的 X 點起步跑，結果他們在距離 Y 點 20m 的 Z 點相遇。已知 A 的速度是 B 的 $\frac{8}{9}$ ，求這個長方形操場的周界。(16 分)
A and B starts to run at the same time but in different directions from point X on the rectangular playground, and they met at point Z which is 20 m from the point Y.
It is given that the speed of A is $\frac{8}{9}$ of the speed of B.
Find the perimeter of this rectangular playground. (16 marks)



3. 將 1 至 9 共九個數字排成一個九位數，每個數字只可以用一次，問這個九位數共有多少種排列方法？ (17 分)
Arrange 1 to 9 into a nine-digit, each number can only be used once. How many combinations are possible of the nine-digit? (17 marks)

4. 七位數 5A1A1A5 既能被 3 整除，也能被 5 及被 75 整除，請列出所有 A 的可能值。
(19 分)
The seven-digit 5A1A1A5 can be divisible by 3, divisible by 5 and divisible by 75. Please list all the possible values of A. (19 marks)
5. 在一個農場中，共養了雞、兔和豬共 2017 隻，其中兔比豬多 17 隻。已知這 2017 隻動物共有 6068 隻腳，求這個農場中雞、兔和豬分別的數量。
(20 分)
There are 2017 chickens, rabbits and pigs in a farm. It is known that the number of rabbits are 17 more than the pigs, and these 2017 animals are known to have a total of 6,068 feet. Find the number of chickens, rabbits and pigs in the farm respectively. (20 marks)
6. 小明原本計劃用 30 天完成環島遊，由於他每天的行程比計劃多了 5 km，結果他提前了 5 天便完成環島遊。
(a) 小明原計劃每天完成多少 km？
(b) 整個環島遊全長共多少 km？ (22 分)
Siu Ming planned to complete the island tour with 30 days. As he travelled 5 km a day more than planned, he finished the island tour 5 days ahead of schedule.
(a) How many km did Ming plan to go every day?
(b) What is the total distance (in km) around the island tour? (22 marks)
7. 已知 X 和 Y 為正整數，使得 $X^2 - Y^2 = 2017$ ，求 X 與 Y 的乘積。
(24 分)
It is known that X and Y are positive integers such that $X^2 - Y^2 = 2017$, find the product of X and Y . (24 marks)
8. 一副撲克牌有四種花式各 13 張，最少抽多少張，才能確保抽出的牌有兩張是 8？
(27 分)
A deck of playing card contains four patterns, each pattern has 13 cards. At least how many cards should be drawn to ensure that we have two 8? (27 marks)
9. 設 $A = 2017 + 20177 + 201777 + 2017777 + \dots + 201\underbrace{7777777777777777}_{\text{共 15 個 7}}$ ，求 A 的最後 6 位數字。
(29 分)
Let $A = 2017 + 20177 + 201777 + 2017777 + \dots + 201\underbrace{7777777777777777}_{\text{Total fifteen of 7}}$. Find the last 6 digits of A. (29 marks)

10. 某三角形三條邊的邊長分別是 2017，7102 和 X，其中 X 是正整數，求 X 有多少個不同的可能值。 (30 分)

A triangle has side lengths 2017, 7102 and X, where X is a positive integer. How many different possible values of X are there? (30 marks)

11. 農場上有一片生長速度保持不變的草地，可飼養 200 隻羊 12 周，或飼養 160 隻羊 20 周，那麼這個農場可飼養多少隻羊 30 周？ (33 分)

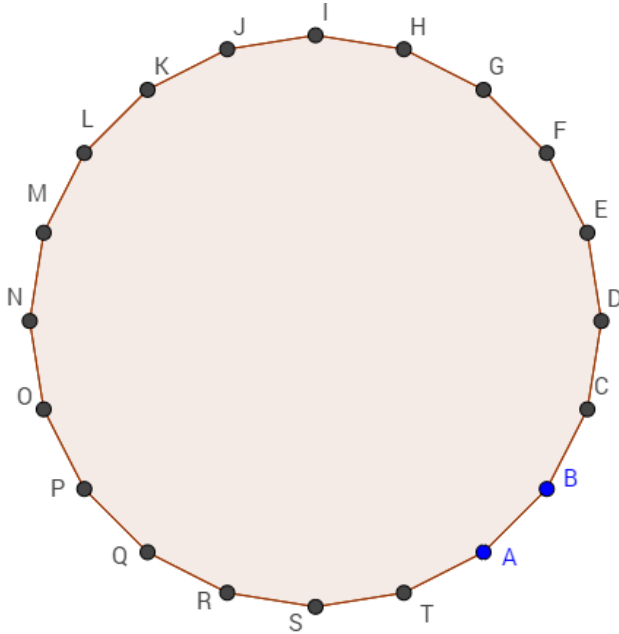
On the farm, the grass grows at a constant rate. It can feed 200 sheep for 12 weeks, or 160 sheep for 20 weeks. So how many sheep can it feed for 30 weeks? (33 marks)

12. 已知一長方體的長、寬、高均為整數，相鄰兩個面的面積是 250 平方厘米和 550 平方厘米。求表面面積最小的長方體的體積。 (35 分)

It is given that the length, width and height of a cuboid are integers, and the area of two adjacent faces is 250 square centimeters and 550 square centimeters. Find the volume of this cuboid with the smallest surface area. (35 marks)

13. 下圖中，求這個多邊形的內角和是多少。 (36 分)

In the following figure, find the interior angle sum of the polygon. (36 marks)



14. 學生 A, B, C, D 預測籃球校隊在某個比賽中的名次。

- A：校隊得到的不是冠軍；他們得到的是季軍。
- B：校隊得到的不是亞軍；但也不是三甲不入。
- C：校隊得到的不是冠軍；他們得到的是亞軍。
- D：校隊得到的不是亞軍；但也不是季軍。

四人中，有兩人全部猜中，有兩人全部猜錯。請在答題紙上圈出籃球校隊所得的名次。
(38 分)

Students A, B, C, D predict the ranking of their school's basketball team in a match.

- A: The school team is not the champion; they get the second runner-up.
- B: The school team is not the first runner-up; but they are among the top three.
- C: The school team is not the champion; they get the first runner-up.
- D: The school team is not the first runner-up; and not the second runner-up.

Two students had the correct guess while the other two students had the wrong guess. On the Answer Sheet, please circle the ranking that the school's basketball team get. (38 marks)

15. 求下面第五十行的和：

(40 分)

Find the sum of the Line Fifty.

(40 marks)

第一行 \ Line One : 101
 第二行 \ Line Two : 102+103
 第三行 \ Line Three : 104+105+106
 第四行 \ Line Four : 107+108+109+110
 ...
 第五十行 \ Line Fifty : ...

試卷完 END OF PAPER