

第一屆全港小學數學挑戰賽(2014-2015)
The 1st Hong Kong Primary Mathematics Challenge (2014-2015)

初賽 (二零一四年十二月六日)
Semi-Final (6th December, 2014)

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.

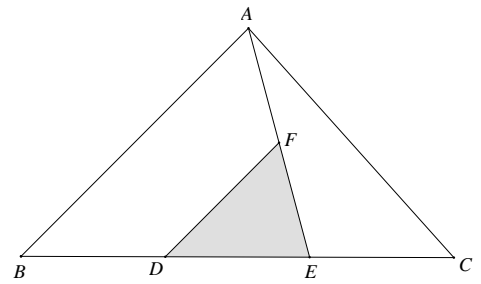
時限：四十五分鐘
Time allowed: 45 minutes

總分：100
Total marks: 100

1. 計算 $(1-2+3-4)+(2-3+4-5)+(3-4+5-6)+\dots+(18-19+20-21)$ 。 (3 分)
Find the value of $(1-2+3-4)+(2-3+4-5)+(3-4+5-6)+\dots+(18-19+20-21)$. (3 marks)
2. 計算 $3.4\times 2.5+4.63\times 7.5+7.1\div 4$ 。 (4 分)
Find the value of $3.4\times 2.5+4.63\times 7.5+7.1\div 4$. (4 marks)
3. 計算 910 的所有質因數之和。 (4 分)
Find the sum of all the prime factors of 910. (4 marks)
4. 某一間超級市場的雪糕和餅乾分別以八折和九折出售，安琪買了原價 \$60 的雪糕及一包餅乾，如果她總共節省了 \$15.6，問一包餅乾原價是多少？ (4 分)
A supermarket gives 20% and 10% discount on ice-cream and biscuits respectively. Angel bought a box of ice-cream with marked price of \$60 and a pack of biscuits. If she saved \$15.6, what was the marked price of a pack of biscuits? (4 marks)
5. 找出 210, 792 與 816 的最大公因數(H.C.F.) 。 (3 分)
Find the Highest Common Factor (H.C.F.) of 210, 792 and 816. (3 marks)
6. 在 1 至 2014 之間，有多少個數字同時被 3、4、5 除時，所得餘數均為 2? (4 分)
How many numbers are there from 1 to 2014 that give a remainder of 2 when they are divided by 3, 4 and 5? (4 marks)
7. 從 1 至 50 中，共有多少個 '1'? (5 分)
How many '1' are there from 1 to 50? (5 marks)
8. 在 3 位數當中，有多少個是正方形數? (5 分)
How many 3-digit numbers are square numbers? (5 marks)
9. 計算 $\frac{1}{1\times 2}+\frac{1}{2\times 3}+\frac{1}{3\times 4}+\dots+\frac{1}{29\times 30}$ 。 (5 分)
Find the value of $\frac{1}{1\times 2}+\frac{1}{2\times 3}+\frac{1}{3\times 4}+\dots+\frac{1}{29\times 30}$. (5 marks)
10. 求 $516\times 615\times 1212$ 除以 13 的餘數。 (7 分)
Find the remainder when $516\times 615\times 1212$ is divided by 13. (7 marks)

11. 圖中 $BD = DE = EC$ 及 $AF = FE$ 。若 $\triangle ABC$ 的面積是 15，求 $\triangle DEF$ 的面積。(5 分)

In the figure, $BD = DE = EC$ and $AF = FE$. If the area of $\triangle ABC$ is equal to 15, find the area of $\triangle DEF$. (5 marks)



12. 若 3 個連續正整數的最小公倍數為 2448，求該 3 個數。(5 分)

If the Least Common Multiple (L.C.M.) of three consecutive positive integers is 2448, find these three numbers. (5 marks)

13. 在一間學校裡，女生人數的 $\frac{6}{7}$ 是男生人數的 $\frac{3}{4}$ 。如該校有 600 名學生，求女生人數。(5 分)

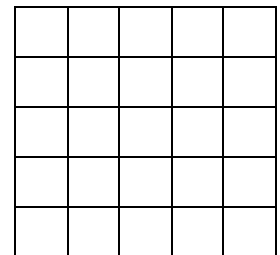
In a school, $\frac{6}{7}$ of the number of girls is equal to $\frac{3}{4}$ of the number of boys. If the school has 600 students, find the number of girls. (5 marks)

14. 右圖中的正方形由 25 個 $1\text{cm} \times 1\text{cm}$ 的小正方形組成。(6 分)

The following square is composed of 25 squares of $1\text{cm} \times 1\text{cm}$.

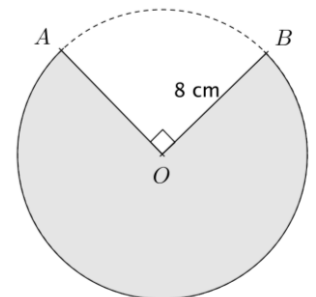
求圖中不同正方形的數量及其總面積。(6 分)

Find the number of different squares and their total area. (6 marks)



15. 圖中圓形的半徑為 8 cm，圓心為 O ，且 OA 及 OB 互相垂直。求陰影部份的周界。(6 分)

In figure, O is the centre of the circle. OA and OB are perpendicular to each other and the radius of circle is 8 cm. Find the perimeter of the shaded region. (let $\pi = 3.14$) (6 marks)



16. 已知 a, b, c, d, e 是正整數，而且

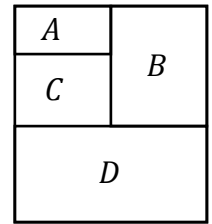
Given that a, b, c, d, e are positive integers and

$$a - \frac{1}{b + \frac{1}{c - \frac{1}{d + \frac{1}{e}}}} = \frac{19}{13}$$

求 $a - b + c - d + e$ 的值。(6 分)

Find the value of $a - b + c - d + e$. (6 marks)

17. 如圖所示把一個長方形分割成 4 個區域 (A、B、C 和 D)。每個區域將會填上一種顏色 (只可從綠色、啡色、藍色、灰色和黃色選擇一種顏色), 而相鄰的兩個區域的顏色不可相同。



A rectangle is divided into 4 zones (A, B, C, and D) as shown in the figure. Each zone will be filled with one of the 5 colours (green, brown, blue, grey and yellow). The colour of two adjacent zones cannot be the same.

若區域 C 填上黃色, 求在其他 3 個區域填上顏色的方法的總數。

(5 分)

If zone C is filled in yellow, find the number of ways of colouring the other 3 zones.

(5 marks)

18. 計算 $101^2 + 103^2 + 105^2 + 107^2 + 109^2 - (100^2 + 102^2 + 104^2 + 106^2 + 108^2)$ 。

(7 分)

Find the value of $101^2 + 103^2 + 105^2 + 107^2 + 109^2 - (100^2 + 102^2 + 104^2 + 106^2 + 108^2)$.

(7 marks)

19. 靜水中甲、乙兩船的速度分別是 20 公里/小時和 18 公里/小時。兩船先後自港口順水開出, 乙比甲早出發 2 小時, 若水速是每小時 4 公里, 問甲開出後幾小時可追上乙?

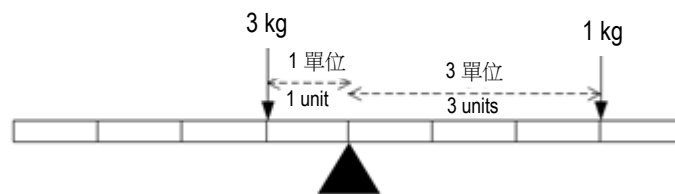
(6 分)

The speed of ship A and ship B in still water are 20km/h and 18km/h respectively. Both ships depart downstream from a harbour and ship B departs 2 hours earlier than ship A. If the speed of water flow is 4km/h, how many hours later will ship A take to catch up with ship B?

(6 marks)

20. 細看下圖, 天秤是處於平衡狀態。

The following figure showed a balance in its equilibrium state.

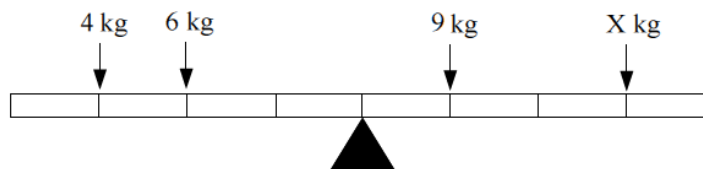


求 X 的值使下圖的天秤處於平衡狀態。

(5 分)

Find the value of X in order to keep the balance equilibrium.

(5 marks)



試卷完 END OF PAPER