第五屆全港小學數學挑戰賽(2018-2019)
The 5th Hong Kong Primary Mathematics Challenge (2018-2019)

初賽（二零一八年十二月一日）
Semi-Final (1st December, 2018)

小四組	組別項目	試卷
Primary 4	**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　　總分：400
Time allowed: 45 minutes　　Total marks: 400

1. 2018 有多少個正因數？ (15 分)
How many positive factors are there in 2018? (15 marks)

2. 計算 $1-3+5-7+9-11+\cdots-95+97$ 。 (17 分)
Evaluate $1-3+5-7+9-11+\cdots-95+97$. (17 marks)

3. 下圖的數字時鐘顯示的時間是 19:33，問最少多少分鐘後時鐘顯示的時間會是一個對稱的圖像？ (19 分)
The digital clock below shows the time at 19:33, at least how many minutes later will the clock display a symmetrical image? (19 marks)

4. (a) 把「+」或「－」號填入以下算式中的 □ 內，使算式成立。 (16 分)
(b) 當填入最少的「－」號使算式成立時，「－」號需填在哪些數字之前？ (5 分)
(a) Fill in the following □ with the operation signs "+" or "–" such that the equation can be balanced. (16 marks)
(b) When the least number of "–"signs was/were used, which number(s) should the "–"sign be inserted in front of it/them? (5 marks)

1 □ 2 □ 3 □ 4 □ 5 □ 6 □ 7 □ 8 □ 9 = 1

5. 圖一展示了一個按特定準則而填妥的數字方格。如按相同準則製作另一個數字方格(如圖二所示)，求「*」的值。 (22 分)
Figure 1 is a completed figure according to a set of specific rules. If another figure is made under the same set of rules (as shown in Figure 2), find the value of '*'. (22 marks)

208	**52**	**4**
8	**700**	**78**
26	**12**	**312**

圖一 (Figure 1)

160	**32**	**5**
	*****	**52**
20	**13**	

圖二 (Figure 2)

6. 參考附圖，根據規律，求圖一至圖十圓點的總數量。 (23 分)
According to the pattern of the following figures, find the total number of dots from Figure 1 to Figure 10. (23 marks)

圖一(Figure 1)　圖二(Figure 2)　圖三 (Figure 3)　圖四 (Figure 4)

7. 求以下算式中各英文字母可代表的數字(0-9)。(每個英文字母均代表不同的數字) (24 分)
Find the digits (0-9) represented by the different letters in the following calculation. (Each letter has a different value.) (24 marks)

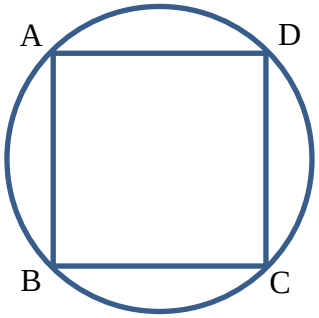
$$\begin{array}{cccc} & A & B & C & D \\ & A & B & C & D \\ & A & B & C & D \\ + & A & B & C & D \\ \hline & D & C & B & A \end{array}$$

8. 從 1 到 2018 的正整數中，能被 2 整除，但不能被 3 或 7 整除的數有多少個？ (25 分)
Among all positive integers from 1 to 2018, how many of them are divisible by 2 but not divisible by 3 or 7? (25 marks)

9. 某年二月有 5 個星期日，問該年五月最後一天是星期幾？ (26 分)
There are 5 Sundays in February of a certain year. What is the day of the last day in May? (26 marks)

10. 圖中的扭計骰(魔方)是一個正十二面體，由 12 個相同的正五邊形組成。求正十二面體的邊的數目。 (27 分)
The Rubik's Cube in the figure is a regular dodecahedron made by 12 identical regular pentagons. Find the number of edges of a regular dodecahedron. (27 marks)

11. 如圖所示，正方形 ABCD 的四個頂點均在一個直徑為 10 單位的圓上。求正方形 ABCD 的面積。 (28 分)
As shown in the figure, square ABCD has all four of its vertices on a circle with diameter of 10 units. Find the area of the square ABCD. (28 marks)

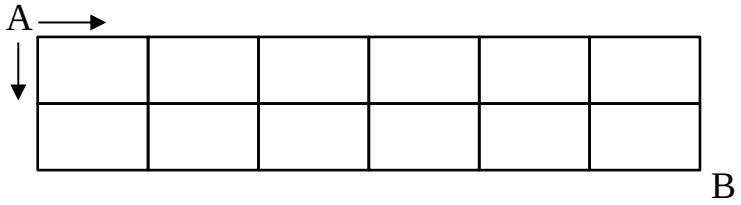


12. 求可被 12、15 和 24 整除的最小四位正整數。 (29 分)
Find the smallest four-digit positive integer which is divisible by 12, 15 and 24. (29 marks)

13. 37 個同學要坐船過河，渡口處只有一隻能載 5 人的小船(船上沒有船夫)。
如果全部同學要渡河，他們最少要使用這隻小船渡河多少次？ (30 分)
37 students have to cross the river by boat. There is only one boat (with no boatman) that can only carry five people. All of them have to cross the river, at least how many times they have to use this boat to cross the river? (30 marks)

14. 某城市舉行數學比賽，有 52 間學校共 308 名學生參賽。賽例規定每間學校最多派出 6 人參賽。問最少有多少間學校派出了 6 人參賽? (31 分)
A city is organizing a mathematics competition. There are 52 schools with 308 students joining the competition. Each school can send at most 6 students to participate the competition. At least how many schools have sent 6 students to participate in the competition? (31 marks)

15. 彼得需要由 A 點走到 B 點，他只可以向下走或向右走。每到一個路口，他可以改變方向或繼續朝原本的方向走。由 A 點到 B 點有多少條不同的路線？ (31 分)
Peter needs to travel from point A to point B. He can only walk downward or rightward, and he can change direction or keep the same direction in each street junction. Find the total number of paths from A to B. (31 marks)



16. 以下是四個人 A、B、C 和 D 的對話。
A 對 D 說：「你的年齡最小。」
C 對 A 說：「你的年齡不是最大。」
B 對 C 說：「你的年齡不是最小。」
已知他們會對比自己年輕的人說謊，而對比自己年長的人說真話。
把 A、B、C 和 D 依照年齡由小至大排列。 (32 分)
Here are the conversations of four people A, B, C and D.
A said to D: "You are the youngest."
C said to A: "You are not the oldest."
B said to C: "You are not the youngest."
It is known that they tell lie to the younger ones, and tell the truth to the older ones. Arrange A, B, C, and D according their ages from the smallest to the largest. (32 marks)

試卷完 END OF PAPER