

第七屆全港小學數學挑戰賽(2020-2021)
The 7th Hong Kong Primary Mathematics Challenge (2020-2021)

決賽 (二零二零年十二月五日)
Final (5th December, 2020)

小五組 個人項目 試卷
Primary 5 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. 根據規律，找出橫線上的數字。
Find the missing number in the pattern. (2 分)
(2 marks)
2, 1, 3, 4, 7, 11, _____, 29, ...

2. 用電鋸把一根鐵棒鋸成 3 段需要 6 分鐘。如果鋸成 5 段，需要多少分鐘？ (3 分)
An iron bar is cut with a saw into 3 parts in 6 minutes. If it is cut into 5 parts, how long does it take? (3 marks)

3. 已知 X 為正整數。當 2019 減去 X 後，所得的數可被 3、7 及 9 整除，求 X 的最大值。
It is known that X is a positive integer. When 2019 minus X, the number obtained can be divisible by 3, 7 and 9. Find the maximum value of X. (3 分)
(3 marks)

4. 求 $(9999 + 9997 + 9995 + \dots + 9001) - (1 + 3 + 5 + \dots + 999)$ 的值。
Find the value of $(9999 + 9997 + 9995 + \dots + 9001) - (1 + 3 + 5 + \dots + 999)$. (3 分)
(3 marks)

5. 現有相同數量的小說和教科書。五分之二的小說和四分之三的教科書是硬皮書。硬皮書的書佔全部書籍的幾分之幾？
There are equal number of novels and textbooks. $\frac{2}{5}$ of the novels and $\frac{3}{4}$ of the textbooks are in hard covers. What fraction of the total number of books is in hard cover? (3 分)
(3 marks)

6. $\bullet = \nabla + \nabla + \nabla$
 $\bullet + \bullet + \square = \square + \square$
 $\square =$ 多少個 ∇ ? (3 分)
 $\bullet = \nabla + \nabla + \nabla$
 $\bullet + \bullet + \square = \square + \square$
 $\square =$ how many ∇ ? (3 marks)

7. 在 40 個學生中，有 20 人打網球，有 19 人打排球，有 6 人既打網球又打排球，試問有多少學生既不打網球又不打排球？
There are 40 students. 20 of them play tennis and 19 of them play volleyball. 6 of them plays both tennis and volley ball. How many students play neither tennis nor volley ball? (3 分)
(3 marks)

8. 一漢堡包專門店提供「買四送一」的優惠，陳先生一家共吃了十個漢堡包。若折扣百分率是 $x\%$ ，求 x 。
A hamburger shop offers a 'buy 4 get 1 free' promotion. Mr. Chan's family ate 10 hamburgers in total. If the discount percentage is $x\%$, find x . (4 分)
(4 marks)

9. 9 個連續整數，它們都大於 80，那麼其中質數至多有多少個？ (5 分)
 There are 9 consecutive integers, all of which are greater than 80, so at most how many of them are prime number? (5 marks)

10. 下列算式中「A」、「B」和「C」可代表的數字 (0–9)，求兩位數字“AB”。 (6 分)
 The digits (0–9) represented by ‘A’, ‘B’ and ‘C’ in the following calculations. Find the two-digit number “AB”. (6 marks)

$$\begin{array}{r} \text{A B} \\ + \quad 3 \\ \hline \text{A C} \end{array} \qquad \begin{array}{r} \text{A B} \\ \times \quad 3 \\ \hline \text{C A} \end{array}$$

11. 若各數字可重複選用，從數字 4, 5, 6, 7, 8 中，可組成多少個 3 位數？ (6 分)
 How many 3-digit numbers can be made from the numbers 4, 5, 6, 7, 8 when repetitions are allowed? (6 marks)

12. 如果整數 m 、 n 滿足等式 $\frac{m-n}{m+n} = \frac{2}{5}$ ，求 $m^2 + n^2$ 的最小值。 (6 分)
 If m, n are integers satisfying the equation $\frac{m-n}{m+n} = \frac{2}{5}$, find the least possible value of $m^2 + n^2$. (6 marks)

13. 求 $\frac{2018}{\frac{2018}{2019} + 1009}$ 的值。 (7 分)
 Find the value of $\frac{2018}{\frac{2018}{2019} + 1009}$. (7 marks)

14. 一個矩形被分割成一些小矩形，如圖中所示，其中已標明五個小矩形的面積 (此圖未必按比例繪成)，求圖中 x 的值。 (7 分)
 One rectangle is divided into smaller rectangles as shown in the diagram. The numbers shown in the diagram are the areas of the smaller rectangles (the diagram is not necessarily drawn in scale). Find the value of x . (7 marks)


1	2	
	3	4
x		16


15. 求 10^{2019} 除以 7 的餘數。 (7 分)

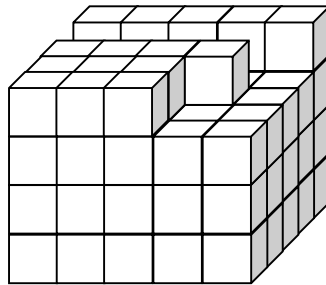
Find the remainder when 10^{2019} is divided by 7. (7 marks)

16. 一個袋子內有 12 個紅色，10 個白色，6 個藍色和 2 個黃色的球。要確保有 4 個相同顏色的球，至少要從袋子中取出多少個球？ (7 分)

A bag contains 12 red, 10 white, 6 blue and 2 yellow balls. At least how many balls must be taken out from the bag so that there must be 4 balls of the same colour? (7 marks)

17. 每個正立方體  的體積為 1 cm^3 ，求以下立體的最大體積是多少？ (8 分)

The volume of a cube  is 1 cm^3 , find the maximum volume of the following solid. (8 marks)

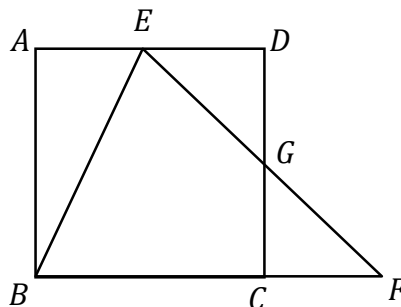


18. 今年是 2019 年。父母的年齡之和是 78 歲，兄弟的年齡之和是 17 歲。四年後，父親的年齡是弟弟的 4 倍，母親的年齡是哥哥的年齡的 3 倍。那麼當父親的年齡是哥哥的年齡的 3 倍時是哪一年？ (8 分)

This year is 2019. The sum of the parents' age is 78 and the sum of two sons' age is 17. Four years later, the father's age is 4 times as the age of the younger son and the mother's age is three times as the age of the elder son. In which year, the father's age will be three times as the age of the elder son? (8 marks)

19. 圖中正方形 $ABCD$ ， E 是 AD 的中點， G 是 CD 的中點，而 EGF 和 BCF 皆是直線；已知正方形面積是 80 cm^2 ，求三角形 BEF 的面積是多少？ (9 分)

In the figure, $ABCD$ is a square, E and G are the mid-points of AD and CD respectively, EGF and BCF are straight lines. Given that the area of square $ABCD$ is 80 cm^2 , find the area of $\triangle BEF$. (9 marks)



試卷完 END OF PAPER