

2020 香港 數學盃
Hong Kong Mathematics Cup 2020
全港綜合數學能力大賽



P5

問題簿

Question
Booklet

姓名 Name : _____	參賽者編號 Reg No : <table border="1"><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr></table>					

限時：40分鐘

不允許使用計算機。

考生須知：

1. 未宣布開始前，切勿翻閱此問題簿。
2. 請在此問題簿封面的適當位置寫上你的姓名及參賽者編號。
3. 所有答案必須寫在答題紙內，並須用鉛筆作答。請勿填寫或畫花題號後方的圓圈，否則該題答案將會作廢。
4. 請核對答題紙上列出的資料是否與你相符。如有問題，請舉手。
5. 比賽完結時監考員會收回桌上的草稿紙，但草稿紙上所書寫的任何文字或圖表將不獲評閱。
6. 問題簿的附圖不一定依比例繪成。

Time : 40 minutes

Calculators are NOT permitted.

Instructions :

1. DO NOT OPEN THIS QUESTION BOOKLET UNTIL YOU ARE TOLD TO DO SO.
2. Write your name and registration number on the cover of this question booklet.
3. Please use a pencil and write your answers neatly ONLY on the answer sheet provided. DO NOT write or draw in the circle next to each answer box. No mark will be given if you failed to follow this instruction.
4. If the information printed on your answer sheet is not correct, please inform the invigilator immediately.
5. Rough-work sheets provided will be collected at the end of the contest but they will not be marked.
6. Diagrams in this question booklet are not necessarily drawn to scale.

Part 1 Calculation 運算題

1. $1\frac{5}{6} - 5\frac{3}{8} + 8\frac{2}{9} =$ [2 marks]

2. $24 \times 17 + 48 \div 2 + 24 \times 32 + 16 \times 50 =$ [2 marks]

3. $0.0003 \text{ km}^2 = \underline{\hspace{1cm}}? \underline{\hspace{1cm}} \text{ cm}^2$ [2 marks]

4. $1.025 \times 8.4 + 11.4 =$ [2 marks]

5. $1\frac{1}{3} \times 1\frac{1}{4} \times 1\frac{1}{5} \times 1\frac{1}{6} \times 1\frac{1}{7} \times 1\frac{1}{8} =$ [2 marks]

6. $88 \times 99\frac{17}{22} =$ [2 marks]

7. $2.23 \text{ L} + 405 \text{ mL} = \underline{\hspace{1cm}}? \underline{\hspace{1cm}} \text{ L}$ [2 marks]

8. $3\frac{1}{33} \div 4\frac{4}{99} =$ [2 marks]

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下一頁

Part 2 Fundamental Questions 基礎題

9. Lily is facing Northwest. She then turns 莉莉面向西北方。然後她向右轉了 [3 marks]
 $53\frac{1}{2}$ right angles to the right. Which $53\frac{1}{2}$ 個直角。最後她面向哪一方？
direction is she facing at last?
10. A cube with side 8 cm is cut into 8 把某邊長為 8 厘米的正方體分割成 8 [3 marks]
identical smaller cubes. What is the 個相同的較小正方體。總表面面積增
increase in total surface area in cm^2 ? 加了多少平方厘米？
11. The age of grandpa is one more than 爺爺的年齡比爸爸的兩倍大一歲。爸 [3 marks]
twice of father. The age of father is one 爸的年齡比明明的兩倍小一歲。已知
less than twice of Marco. It is given that 爺爺今年 95 歲，明明今年幾歲？
the age of grandpa is 95. Find the age of
Marco.

Please turn over the page.

下一頁

12. $\frac{2}{5}$ of student pass in the first test. [3 marks]
第一次測驗有 $\frac{2}{5}$ 的學生合格。不合格
- Students who failed in the first test take a
second test and $\frac{3}{4}$ of them pass in the
second test. What fraction of all students
fail in the tests at last? 的學生參加第二次測驗並有 $\frac{3}{4}$ 於第二
次測驗中合格。最終不合格的學生佔
幾分之幾？

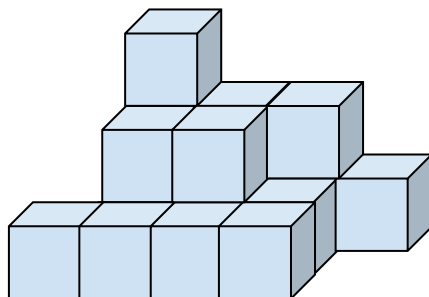
13. A and B start walking towards each other [3 marks]
甲、乙兩人同時分別從相距 1.2 公里
- from places X and Y which are 1.2 km
apart. A walks 28 metres every minute
and B walks 32 metres every minute. 的 X、Y 兩地相向而行，甲的速度是
每分鐘 28 米，乙的速度是每分鐘 32
- How many minutes does it take for A
and B to meet? 米，則兩人經過多少分鐘相遇？

Please turn over the page.

下一頁

14. The H.C.F of two numbers is 3. The L.C.M. of the two numbers is 180. If one of the numbers is 15, find the other number.
- 兩數的最大公因數和最小公倍數分別是 3 和 180。若其中一個數是 15，另一個數是甚麼？
- [3 marks]

15. The figure below is built with identical cubes with sides 1 cm. At least how many more identical cubes are needed to fill in the figure to make a larger cube?
- 下圖由邊長 1 厘米的相同正方體組成。至少要加上多少粒相同的正方體去組成一個較大的正方體？
- [3 marks]



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下一頁

16. A toy costs 82 dollars. Cherry saves $6\frac{4}{5}$ dollars every day to buy the toy. After she saves enough money to buy the toy, how much is left? [3 marks]
- 某玩具售 82 元。小妮每天儲蓄 $6\frac{4}{5}$ 元去買玩具。當她有足夠金錢去買玩具後，餘下多少元？
17. There are 690 students in a school. $\frac{11}{23}$ of students are boys. What fraction is the number of girls more than that of boys? [3 marks]
- 學校裏有 690 名學生，其中 $\frac{11}{23}$ 的學生是男生。女生比男生多幾分之幾？
18. Remove 10 digit from the number “246810121412108642” to form an 8-digit number. What is the largest possible number? [3 marks]
- 在多位數 “246810121412108642” 中刪去 10 個數字，令餘下數字組成的八位數是最大，這個八位數是多少？

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下一頁

Part 3 O Math Questions 奧數題

19. Calculate 計算 [4.5 marks]

$$\frac{2019 + 2021 + 2023 + \dots + 2035}{2020 + 2022 + 2024 + \dots + 2036}$$

20. The full mark of a test is 100. The average score of five students is 90. If the five students get different marks and the lowest score among them is 70. What is the least possible score of the third highest student? 某測驗的滿分是 100 分。五名學生的平均分是 90 分。若五名學生的分數全不相同而他們當中最低分是 70 分。第三名的學生最少得幾分？ [4.5 marks]

21. In the sums, different letters represent different numbers. $A \times B \times C = ?$ 算式中，不同的英文字母表示不同的數字。 $A \times B \times C = ?$ [4.5 marks]

$$\begin{array}{r}
 \\
 \\
 \\
 \hline
 9 \\
 8 \\
 7
 \end{array}$$

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22. In a class of 40 students, 28 students are boys. If 25 students in the class do not wear glasses, at most how many boys in the class wear glasses? 某班有 40 名學生，其中 28 名是男生。若班中有 25 名學生不戴眼鏡，戴眼鏡的男生最多有多少名？ [4.5 marks]
23. If $4\oplus 10$ stands for $4 \times 5 \times 6 \times \dots \times 10$, calculate $(5\oplus 28) \div (3\oplus 25)$ 若 $4\oplus 10$ 代表 $4 \times 5 \times 6 \times \dots \times 10$ ，計算 $(5\oplus 28) \div (3\oplus 25)$ 。 [4.5 marks]
24. At first, there were same number of boys and girls at a birthday party. During the party, 18 more boys joined in and 9 girls left. There were now four times as many boys as there were girls. How many children were at the party in the end? 在生日會開始時，男生與女生的數目相同。期間 18 名男生加入，9 名女生離開。最後，男生的數目是女生的 4 倍。在生日會結束時，共有小孩多少名？ [4.5 marks]

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下一頁

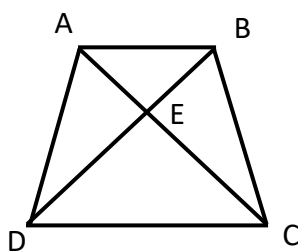
25. The product of three consecutive numbers is 3360. What is the sum of the three numbers? 三個連續數的乘積是 3360，這三個數之和是多少？ [4.5 marks]
26. A book has 875 pages, from Page 1 to Page 875. How many digits (0, 1, 2, ..., 9) are used in printing the page numbers? 一本書有 875 頁，由第 1 頁至第 875 頁。在編排頁碼時，0、1、2、...、9 這些數字共用了多少次？ [4.5 marks]
27. In the table below, the two words in the same column form a group. For example, the first group is “A 數”, the second group is “B 學”, and so on. What is the 502th group? 下表中，將每列上下兩個字組成一組。例如，第一組是「A 數」，第二組是「B 學」，如此類推。第 502 組是甚麼？ [4.5 marks]

A	B	C	D	A	B	C	...
數	學	盃	數	學	盃	數	...

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下一頁

28. In the figure, ABCD is a trapezium. The area of the triangle ABE is 6 cm^2 . The length of AB is halved that of CD. Find the area of trapezium ABCD.
- 圖中，ABCD 是一個梯形。三角形 ABE 的面積是 6 平方厘米。AB 的長度是 CD 的一半。求梯形 ABCD 的面積。
- [4.5 marks]



29. A centre has 9000 basic members, numbered from 1000 to 9999. This year, the center selects basic members to upgrades. If the member number are form by all even numbers, the basic member is upgraded to premium member. How many basic members are upgraded this year?
- 某中心有基本會員 9000 人，會員編號由 1000 至 9999。今年中心挑選基本會員進行升級，凡會員編號的數字全部由雙數組成的基本會員可升級成高級會員。今年有多少位基本會員可升級成高級會員？
- [4.5 marks]

Please turn over the page.

下一頁

30. When a digit '7' is added to the rightmost of a 3-digit number, the 4-digit number formed is 6550 larger than the original 3-digit number. Find the original 3-digit number.
- 在一個三位數的右邊加上數字「7」後，新組成的四位數比原來的三位數大 6550。求原來的三位數。
- [4.5 marks]

End of paper

全卷完