P4
問題簿
Question Booklet

香港數學盃協會
Hong Kong Mathematics Cup Association

2020 香港 數學盃
Hong Kong Mathematics Cup 2020

全港綜合數學能力大賽

姓名 Name：

參賽者編號 Reg No：

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. $213 \times 22 = ?$ [2 marks]

2. $3465 \div 15 = ?$ [2 marks]

3. $\dfrac{1}{11} + \dfrac{2}{11} + \dfrac{3}{11} + \dfrac{4}{11} + \dfrac{5}{11} + \dfrac{6}{11} + \dfrac{7}{11} + \dfrac{8}{11} + \dfrac{9}{11} + \dfrac{10}{11} = ?$ [2 marks]

4. $230000000 \text{ cm}^2 = \underline{\quad?\quad} \text{ km}^2$ [2 marks]

   (Give your answer in decimal number 以小數表示答案)

5. $1\dfrac{2}{7} - 3\dfrac{4}{7} + 5\dfrac{6}{7} = ?$ [2 marks]

6. $1000.01 - 0.02 = ?$ [2 marks]

7. $36 \times 4 + 36 \times 36 - 16 \times 40 =$ [2 marks]

8. $96 \div 13 \times 117 = ?$ [2 marks]

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Part 2　Fundamental Questions 基礎題

9.　Tommy thinks of a number between 600 and 700. When the number is divided by 3, the remainder is 1; when the number is divided by 8, the remainder is 6; when the number is divided by 7, the remainder is 5. What is the number?

小湯想着一個在 600 至 700 之間數字。當這個數字除以 3，餘數是 1；當這個數字除以 8，餘數是 6；當這個數字除以 7，餘數是 5。這個數字是甚麼？ [3 marks]

10.　If $\dfrac{2}{5} < \dfrac{\bigstar}{13} < \dfrac{5}{9}$ and ★ is an integer. How many possible values of ★ are there?

如果 $\dfrac{2}{5} < \dfrac{\bigstar}{13} < \dfrac{5}{9}$，而★是一個整數。★有多少個可能的數值？ [3 marks]

11.　Sally can fold 264 paper cranes every 4 hours. If she spends 6 hours a day to fold paper cranes, how many paper cranes can she fold in 5 weeks?

小莉每 4 小時可摺 264 隻紙鶴。若她每天花 6 小時摺紙鶴，5 個星期可摺紙鶴多少隻？ [3 marks]

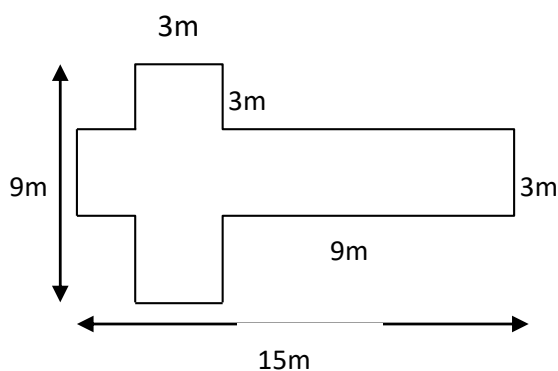**Please turn over the page.**

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12. How many different trapeziums can be found in the figure below?

下圖可以數出多少個不同的梯形？ [3 marks]
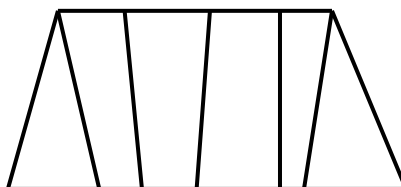
13. The figure below is a cross-shaped swimming pool. A fence is built 5 metres apart from the swimming pool. Find the perimetre of the fence in cm.

下圖是一個十字架形的遊泳池。現於遊泳池的 5 米外加上圍欄，圍欄的周界是多少 cm？ [3 marks]

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14. It is given that the two divisions 223 ÷ 16 and 340 ÷ ★ has the same quotient and remainder. Find the value of ★.

已知兩算式 223 ÷ 16 和 340 ÷ ★ 的商和餘數皆相同。求★的值。 [3 marks]

15. The length and width of two identical rectangles are 28 cm and 13 cm respectively. If they overlap as shown in the figure, what is the area of the figure in cm^2?

有兩個相同的長方形，長是 28 厘米，闊是 13 厘米。如果把它們按下圖疊放，這個圖形的面積是多少平方厘米？ [3 marks]
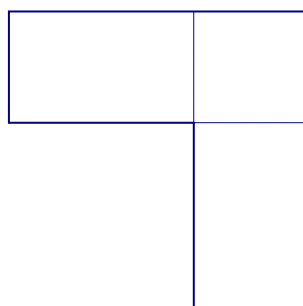
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16. Wayne has $50\frac{4}{5}$ dollars originally. After buying a piece of fried chicken that cost $20\frac{2}{5}$ dollars, he wants to buy a burger that cost $64\frac{2}{5}$. How much more does Wayne need?

小偉原有 $50\frac{4}{5}$ 元，購買一盒價值 $20\frac{2}{5}$ 元炸雞塊後，又想買一份 $64\frac{2}{5}$ 元的漢堡包。小偉還欠多少元？

[3 marks]

17. $125 \times 32 \times \blacklozenge = 48 \times 25 \times 20,$

$\blacklozenge = ?$

[3 marks]

18. If $41.04 = 41\frac{1}{J}$,

then J = _____.

若 $41.04 = 41\frac{1}{J}$ ，

則 J = _____ 。

[3 marks]

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19. There are 400 students in a school. At least how many students are born in the same month?

某校有 400 名學生，問至少有多少名 學生是在同一個月出生？ [4.5 marks]

20. What is the unit digit of the result of $7^{333} \times 3^{777}$?

$7^{333} \times 3^{777}$ 的個位數是多少？ [4.5 marks]

21. There are 15 questions in "The King of Mathematics" competition. The participant gets 10 marks for a correct answer and loses 3 marks for a wrong or blank answer. Cindy gets 72 marks. How many questions does Cindy answer wrongly?

數學之王競賽，共 15 道題，每做對 一道題得 10 分，每做錯一道題或沒 有作答則倒扣 3 分，小思得了 72 分，她做錯或沒有作答幾道題？ [4.5 marks]

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22. There are 37 students in one class. A class monitor is chosen among five candidates, A, B, C, D, and E, and each student must vote a candidate. A has 20 votes, B has the fourth place. C and D have the same votes. E has 3 votes which is the least. So how many votes does B have?

某班有 37 人，從甲、乙、丙、丁、戊五位候選人中選一名正班長，規定每個同學選一個候選人。甲得選票 20 張，乙得選票排第四位，丙、丁得票相同，戊選票最少，是 3 張。那麼乙得選票多少張？
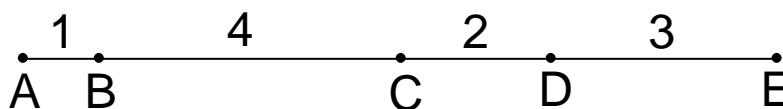
[4.5 marks]

23. It is given that

4☆3 = 4 × 3 - 3 = 9

6☆4 = 6 × 4 - 4 = 20

Find the value of (7☆2)☆5.

已知

4☆3 = 4 × 3 - 3 = 9

6☆4 = 6 × 4 - 4 = 20

求(7☆2)☆5 的值。

[4.5 marks]

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24. If a 6-digit number $\overline{35541a}$ is divisible by 18, find the value of a.

若 $\overline{35541a}$ 可被 18 整除，求 a 的值。 [4.5 marks]

25. Find the sum of the lengths of all the line segments in the figure. (unit: cm)

求下列圖中線段長度的總和。（單位：厘米） [4.5 marks]

26. The perimeter of a rectangular blackboard is 96 m. Its length is 3 times its width. What is the length of the blackboard in m?

一塊長方形黑板的周界是 96 米，它的長度是闊度的 3 倍。這塊長方形黑板的長度是多少米？ [4.5 marks]

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27. A group of students shares the amount to pay for a gift. If each student pays 80 dollars, 40 more dollars are needed. If each student pays 90 dollars, 90 dollars remains. How many students are there in the group?

一組學生合資購買一份禮物。若每人 [4.5 marks] 付 80 元，則尚欠 40 元，若每人付 90 元，則多出 90 元。問該組學生有多少人？

28. Wine in barrel A is 4 times that in barrel B. If 15 litres of wine are pour from barrel A to barrel B, then the two barrel has same amount of wine. How many litres of wine are there in barrel A originally?

甲桶的酒是乙桶的 4 倍，如果從甲桶 [4.5 marks] 中取出 15 升倒入乙桶，那麼兩桶酒的重量相等。甲桶原有酒多少升？

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29. A, B, C, D play football and break the window.

    "A or C broke the window", A says.

    "D broke the window", B says.

    "I did not break the window", C says.

    "I did not break the window", D says.

    One of them tells lie. Who broke the window?

    A、B、C、D 四個孩子踢球打碎了玻璃。   [4.5 marks]

    A 說：〝是 A 或 C 打碎的。〞

    B 說：〝是 D 打碎的。〞

    C 說：〝我沒有打碎玻璃。〞

    D 說：〝不是我打碎的。〞

    他們中只有一個人說了謊，到底是誰打碎了玻璃？

30. There are some chocolates. Dad eats a half of them and one more. Later, Mandy eats a half of the remaining and one more. There are 20 chocolates left. How many chocolates are there originally?

    有一盒朱古力，爸爸吃掉一半多一   [4.5 marks]
    粒，文文又吃掉餘下的一半多一粒。
    最後餘下 20 粒。問盒中原有朱古力
    多少粒？

End of paper

全卷完