Preliminary National Round 3 B

2023 PROBLEM BOOKLET

◎Ten points each. Total 100 points.
每題 10 分，共 100 分。

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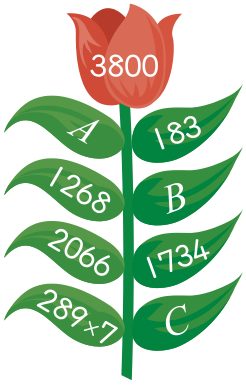
1) As shown, the sum of the numbers on each pair of leaves on the left and the right happens to be the number on the flower. Find $A+B+C$.

如圖，每一對左右成對葉片上的數的和正好等於花中的數，
則 $A+B+C=$？



(A) 7896 (B) 7686 (C) 8006 (D) 7926

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2) Among the 4-digit numbers (with no repeated digits) which are formed by six number cards 5, 1, 8, 3, 6, and 0, find the difference between the largest and the smallest numbers.

用 5、1、8、3、6、0 六張數字卡排成的四位數中(數字不能重複)，最大的數與最小的數相差多少？

(A) 7231 (B) 8518 (C) 7618 (D) 7628

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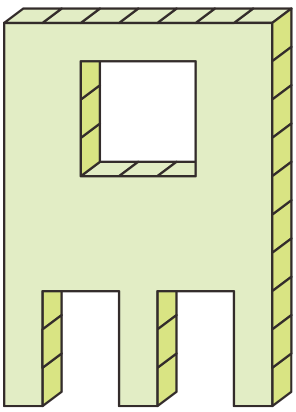
3) How many  's are used in the figure?

如圖，是由多少個  組成的？



(A) 46 (B) 48 (C) 49 (D) 50

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4) Balls in red, yellow, and blue are in the bag. Suppose there are 12 more yellow balls than red balls, 14 more blue balls than yellow balls, and twice as many blue balls as red balls, how many balls are there in the bag?

袋子中有紅球、黃球、藍球各一些，已知黃球比紅球多 12 顆，藍球比黃球多 14 顆，藍球是紅球的兩倍，則袋子中共有多少顆球？

(A) 110 (B) 112 (C) 113 (D) 116

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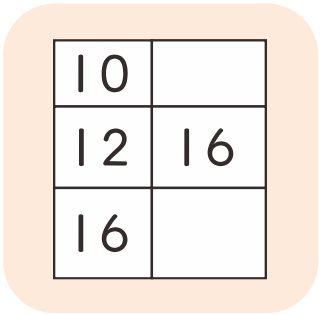
5) A large rectangle is divided into six small rectangles where four of them have the perimeters of 10, 12, 16, and 16 (written below), respectively. If each rectangle has four integral sides, and the minimum value of the perimeter of the large rectangle might be x, find the sum of the digits of x. (The figure is not drawn to scale)

如圖，一個大矩形被分割成六個小矩形，其中四個小矩形的周長分別為 10、12、16、16(已寫上)，若每個矩形的邊長都是整數，則大矩形可能的周長最小值是 x，請問 x 的各位數字總和是多少？(圖形未依比例繪製)



(A) 5 (B) 7 (C) 8 (D) 9

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6) Natural numbers are arranged in ascending order from 1. The first time, 1 number is taken away, which is 1. The second time, 2 numbers are taken away. The third time, 3 numbers are taken away. If numbers are taken away in the same pattern of 1 number, 2 numbers, and 3 numbers, repeatedly, find the sum of the numbers which are taken away in the 100th time.

將從 1 開始由小到大排列的自然數第一次取走 1 個數，即取走 1，第二次取走 2 個數，第三次取走 3 個數，之後按照順序每次取走 1 個、2 個、3 個的方式重複進行，則第 100 次取走的數或它們的和是多少？

(A) 199 (B) 200 (C) 399 (D) 698

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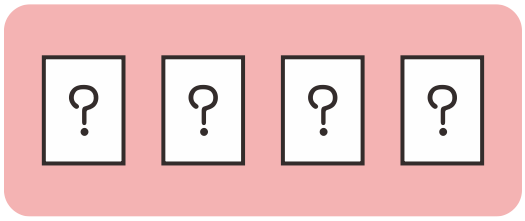
7) Given a 4-digit number math riddle. According to the conditions below, how many correct answers are there?
(1) The 4 digits are distinct.
(2) The product of the 4 digits is 0.
(3) The two digits in the middle are even numbers, and the other two digits are odd numbers.
(4) The sum of the two digits in the middle is the same as the sum of the other two digits.
(5) There is no 1.

老師出了一題四位數謎題，根據下面的條件猜猜看可能有多少個正確答案？
(1)這 4 個數字都不一樣
(2)這 4 個數字的乘積等於 0
(3)中間兩個數字是偶數，另外兩個數字是奇數
(4)中間兩個數字的和與另外兩個數字的和相等
(5)1 不在其中



(A) 2 (B) 4 (C) 6 (D) 8

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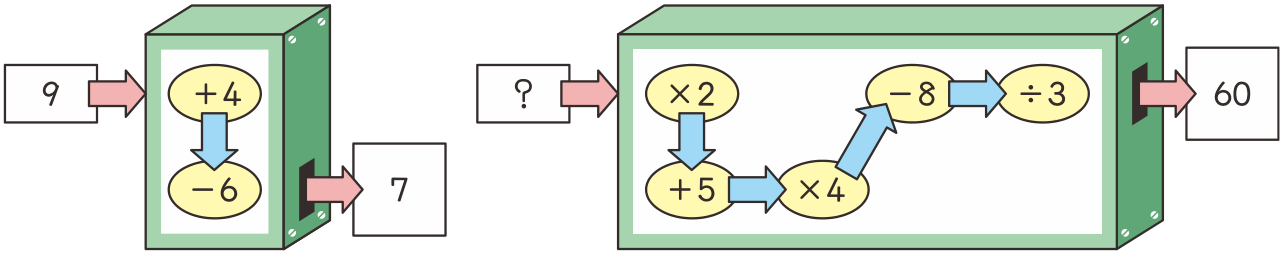
8) Below is a computing machine. Find "?".

如圖，是一種機器運算，請問「？」是多少？



(A) 18 (B) 25 (C) 22 (D) 21

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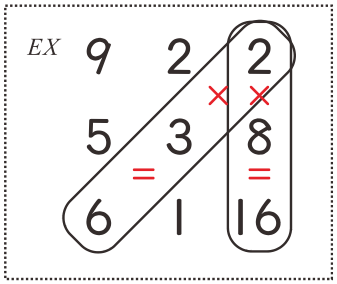
9) As shown, from top to bottom, left to right, upper left to lower right, upper right to lower left, every three numbers are linked as a group. How many multiplication equations are established?

如圖，從上至下，左至右，左上至右下，右上至左下，每三個數一組，共有多少組正確的乘法算式？

5	6	2	4	4
2	7	12	3	18
3	42	3	24	72
8	9	36	21	15



(A) 5 (B) 6 (C) 7 (D) 8

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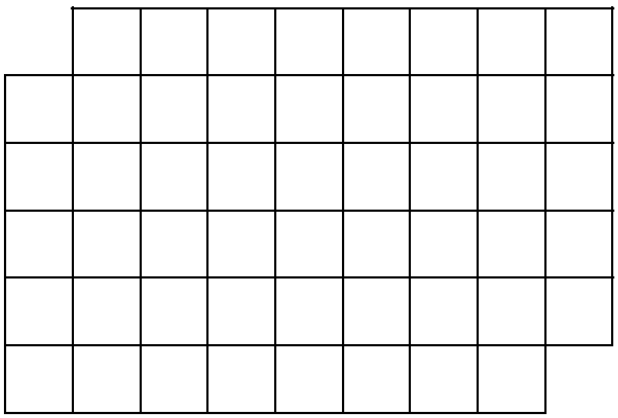
10) The figure below is formed by 52 1×1 squares. If it can be divided into □ different sizes of squares, which number in the options below cannot be □?

如圖，是由 52 個 1×1 的小方格組成的圖形，它正好可以切成□個大大小小的正方形，請問下列哪一個選項的數不可能是□？



(A) 9 (B) 11 (C) 12 (D) 13
