

Mathlete Training Centre

1. Given an arithmetic sequence: "107, 114, 121, 128, 135, ..." What is the 14th number in this sequence?

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2. Find the mean of the following 6 numbers:

243, 231, 247, 242, 238, 239

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3. The symbol " \oplus " represents a calculation procedure defined as $a \oplus b = a + b - 1$. Find the value of $(11 \oplus 12) \oplus (13 \oplus 14)$.

4. When calculating the product of two numbers, Hua mistakenly increased one of the multipliers by 3, resulting in an increase of 54 in the product. Xia, on the other hand, mistakenly increased the other multiplier by 20, resulting in an increase of 500 in the product. What is the correct product?

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5. There are apples, oranges, and pears, totaling 100 fruits. Now, if we use 5 baskets for apples, 7 baskets for oranges, and 8 baskets for pears, with each basket containing the same number of fruits, how many oranges are there?

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6. Find the value of $20240000 \div 5 \div 8 \div 25$.

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7. Hua, Xia, and Bei each prefer a type of meat (beef, pork, or chicken) and own a type of pet (dog, cat, or turtle). It is known that:
- A. The person who owns a dog likes to eat chicken.
 - B. Xia does not like to eat beef.
 - C. Hua owns a cat.
 - D. Bei does not own a turtle.
- Who likes to eat pork?

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8. Trees are planted on both sides of a hiking trail, with one tree planted every 25 metres. A total of 50 trees have been planted. If trees are planted at both ends of the trail, how long is the hiking trail in metres?

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9. Find the value of $3 \times 7 \times 9 \times 11 \times 13 \times 37$.

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10. Two brothers have a total of 65 books, and the number of books that older brother has more than the younger brother is 3 times as the number of books that younger brother has. How many books does the older brother have?

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11. When performing division, if the divisor 43210 was mistakenly written as 4321 and the quotient obtained was 567 with a remainder of 89, what is the correct remainder?

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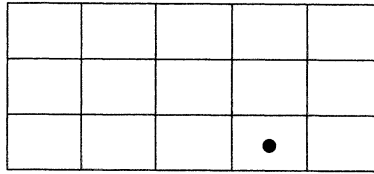
12. Refer to the figure below. The figure consists of 3 identical squares, and its perimeter is 96 centimetres. What is the area of the figure in square centimetres?



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13. Refer to the figure below. How many rectangles in the figure contain black dot?



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14. $\overline{24A01A07}$ is divisible by 9. Find digit A.

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15. Find the value of $2024 \times 107 - 2025 \times 106$.

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16. Hua and Xia start at the same point on a circular track with a perimeter of 2520 metres. Xiaohua walks at a speed of 5 metres per second. If they walk in opposite directions, they will meet after 3 minutes and 30 seconds. If they walk in the same direction, how many minutes will it take for the faster person to catch up with the other?

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17. January 1, 2024, is Monday. What day of the week is December 25, 2025?

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18. There is a staircase with 12 steps, but the 6th step is broken and cannot be stepped on. If one can only climb up 1 or 2 steps in one move, how many ways are there to climb this staircase?

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19. There are chickens and rabbits in the same cage. There are 16 more chickens than rabbits, and the number of legs on the rabbits is 24 more than the number of legs on the chickens. How many chickens are there?

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20. 3 years ago, Hua's father's age was 5 times Hua's age. 6 years after, Hua's father's age will be 3 times Hua's age. How old is Hua this year?

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