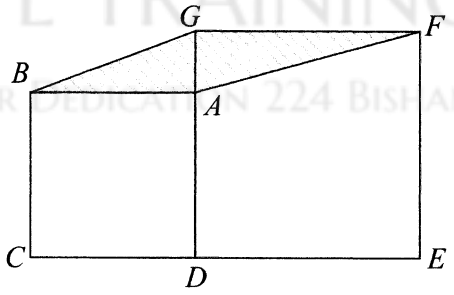
Mathlete Training Centre

2024 HXC P5

1. Referring to the attached figure, the side lengths of squares ABCD and DEFG are 20 and 24 centimetres respectively. What is the area of quadrilateral ABGF in square centimetres?



2. There are 40 students in Class 5A, of which 31 are taking PE lesson and 28 are taking art lesson. If each of them takes at least one of the lessons, how many of them are taking both classes?

3. It is known that 5 apples and 3 watermelons cost a total of 280 dollars, and the price of 1 watermelon is 10 times that of apples. How much does each watermelon cost?

4. The number of candies that Hua and Xia have is in a ratio of 3:5, and they have a total of 120 candies. What is the difference between the numbers of candies they have?

5. If 3 cubes with side lengths of 8 centimetres are combined to form a cuboid, what is the surface area in square centimetres?

6. A fishing boat travels 36 kilometres per hour on calm water. It is on a river with a water flow of 4 kilometres per hour which takes 24 hours to sail downstream from Place A to Place B. How many hours does it take for it to return to Place A from Place B?

7. A square, as large as possible, is cut out from a rectangular piece of paper which is 187 centimetres long and 68 centimetres wide. If the remaining part is not a square, then cut another square as large as possible from the remaining piece of paper. If we keep repeating this, what is the length of the sides of the final square obtained in centimetres?

8. The area of the rectangle is 336 square metres. It is known that its width is 10 metres shorter than its length. What is its perimeter in metres?

9. A train is 376 metres long and crosses a 2024-metre-long bridge at a speed of 20 metres per second. How many minutes does it take in total to cross the bridge(from starting on the bridge to completely disembarking)?

10. It is known that $\overline{ABC}\times$D=512 , and different letters represent different digits, then what is the four-digit number $\overline{ABCD}$?

11. The areas of the three faces of a cuboid are 15, 18 and 30 square centimetres respectively. What is the volume of this cuboid in cubic centimetres?

12. Find the value of $20.24+19.88\times\frac{3}{4}+\frac{7}{8}\times19.88+19.88\times\frac{3}{8}$.

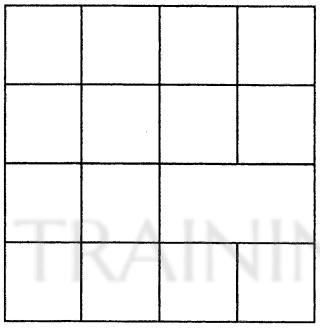
13. What is the sum of the first 100 digits after the decimal point in the resulting recurring decimal from calculating $107\div24$?

14. Find the value of $(701+2024+432)\times(5+701+2024)-(5+701+2024+432)\times(701+2024)$.

15. Find the value of $5555\times7777+3333\times9999-7777\times6666$.

16. A class of students attend a mathematics camp. If every 8 students live in a room, there will be exactly 3 rooms owed. If every 12 students live in a room, there will be exactly 2 rooms left. How many students are there in this event in total?

17. Referring to the attached figure. How many rectangles are there in the figure?



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18. Hua has a total of 50 coins of 1-dollar coins, 2-dollar coins and 5-dollar coins, with a total value of 109 dollars. Among all, the number of 1-dollar coins is twice that of 5-dollar coins. How many 2-dollar coins does Hua have?

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19. There are four numbers A, B, C and D. The average number of A, B and C is 20. The average number of A, B and D is 24. The average number of A, C and D is 25. The average of B, C and D is 27. Find the value of A.

20. Hua, Xia, and Bei collaborate on a project. It takes 20 days for Hua and Xia to complete the project. It takes 24 days for Xia and Bei to complete the project. It takes 30 days for Hua and Bei to complete the project. How many days will it take for Xia to complete this work alone? (Rounded up the answer)