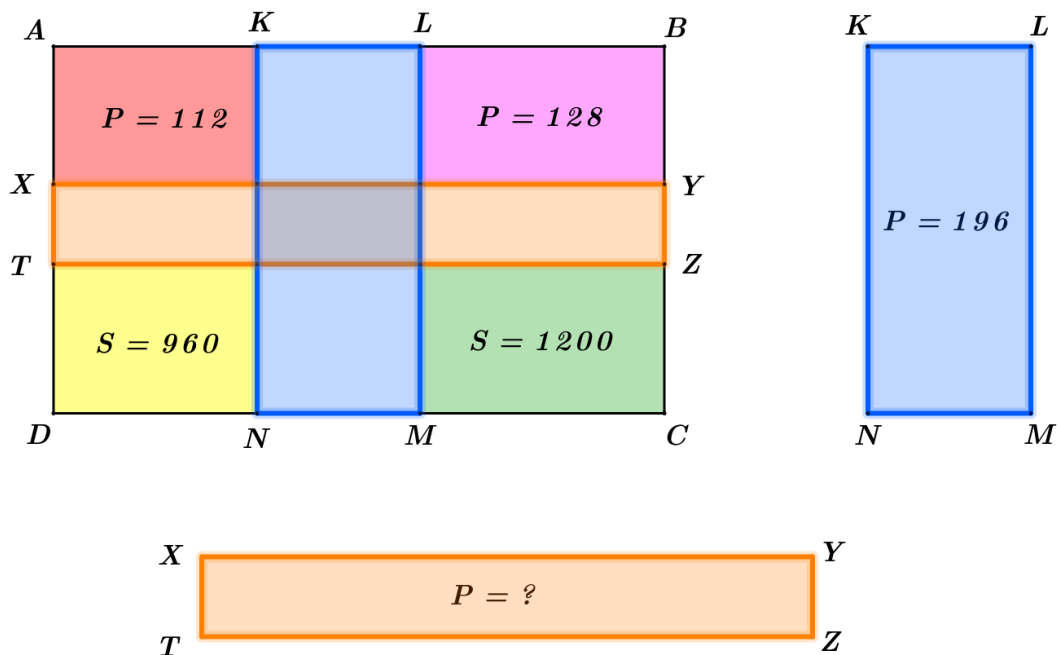


1. We wish to write an arithmetic expression composed of the symbols 1, + and -, whose value is equal to 678. What is the minimal number of 1's that must appear in the expression?
2. In the following addition of three-digit numbers, each of the letters A,B,D represents a different digit from 0 to 9:

$$ABA + ADD = DAB$$

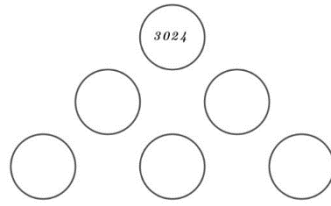
It is known that neither A nor D represent the digit 0. What is the number DAB ?

3. In the rectangle ABCD, a blue rectangle and an orange rectangle are marked as in the picture below. The perimeter of the blue rectangle is 196cm. Four rectangles are created according to the edges of the blue and orange rectangles: A red one, a yellow one, a green one and a pink one. The perimeter of the red rectangle is 112cm, the perimeter of the pink rectangle is 128cm, the area of the yellow rectangle is 960cm^2 , and the area of the green rectangle is 1200cm^2 . Find the perimeter of the orange rectangle.



4. In the magical forest there are 40 birds of three kinds: sparrows, pigeons and owls. The number of sparrows is twice as large as the number of owls. The number of pigeons is less than a third of the total number of birds. The number of owls is less than one quarter of the total number of birds. How many sparrows are there in the forest?
5. The 100 squares of a 10×10 checkered board are numbered from 1 to 100 in some order (each number from 1 to 100 is written exactly once). In each row, the numbers are ascending from left to right, and in each column, the numbers are ascending from bottom to top. The square numbered 39 is in the N^{th} row from the bottom, and in the M^{th} column from the left. What is the minimal possible value for $N+M$?
6. Six circles were drawn on the board as shown in the picture below. In each circle an integer was written. It is known that, for each circle among the three upper circles, the number in that circle was equal to the product of the numbers in the two circles below it. Additionally, it is known that **no two circles had the same number**.

All numbers have been erased except for the number 3024 at the top. What is the largest possible sum the three numbers in the bottom row could have had?



7. The seventh grade class wants to go on a five day trip, in which they will travel 50 kilometers in total. In each day, they may either walk 10 kilometers, 20 kilometers, or rest. In how many different ways can they plan the five-day trip?