

"Perket" is a widely known and delicious meal. For perket to be what it is, cooks must carefully choose the ingredients to get the fullest taste possible while keeping the meal traditional.

You have N ingredients at your disposal. For each we know its sourness S and bitterness B . When using multiple ingredients, the total sourness is the **product** of sourness amounts of all ingredients, while the total bitterness is the **sum** of bitterness amounts of all ingredients.

As everyone knows, perket is supposed to be neither sour nor bitter; we want to choose the ingredients so that the absolute difference between sourness and bitterness is the smallest.

Also, it is necessary to use at least one ingredient; you can't serve water as the main course.

INPUT

The first line contains the integer N ($1 \leq N \leq 10$), the number of ingredients at our disposal.

Each of the next N lines contains two integers separated by a space, the sourness and bitterness of each ingredient.

The input data will be such that, if we make a meal with all ingredients, both the sourness and bitterness will be less than 1000000000.

OUTPUT

Output the smallest possible difference between sourness and bitterness.

EXAMPLES

input 1 3 10 output 7	input 2 3 8 5 8 output 1	input 4 1 7 2 6 3 8 4 9 output 1
---	---	---

In the third example, we choose the last three ingredients. The total sourness is then $2 \cdot 3 \cdot 4 = 24$ and bitterness is $6 + 8 + 9 = 23$. The difference is 1.