# ULTIMATE GREYNESS

A car paint researcher is developing a new paint type. At this state of study, he is finding how he can mix different colors to create a new shade for grey color.

He has N different shades of grey color at his disposal. For each he has specification of its vividness V and dullness D. However, due to the properties of the color's chemicals, when he mixes multiple colors, he found that
- the total vividness is the product of vividness of all colors
- the total dullness is the sum of dullness of all colors.

His goal is to develop *a new unique grey color* such that the absolute difference between vividness and dullness is the smallest.

Obviously, it is necessary to use at least one color.

## INPUT
The first line contains the integer N ($1 \le N \le 10$), the number of colors.
Each of the next N lines contains two integers separated by a space, the vividness and dullness of each color.

## OUTPUT
Output the smallest possible difference between vividness and dullness.

## EXAMPLES

| INPUT | OUTPUT |
|---|---|
| 1<br>3 8 | 5 |
| 2<br>4 8<br>5 10 | 2 |
| 4<br>4 6<br>1 8<br>6 9<br>1 7 | 1 |