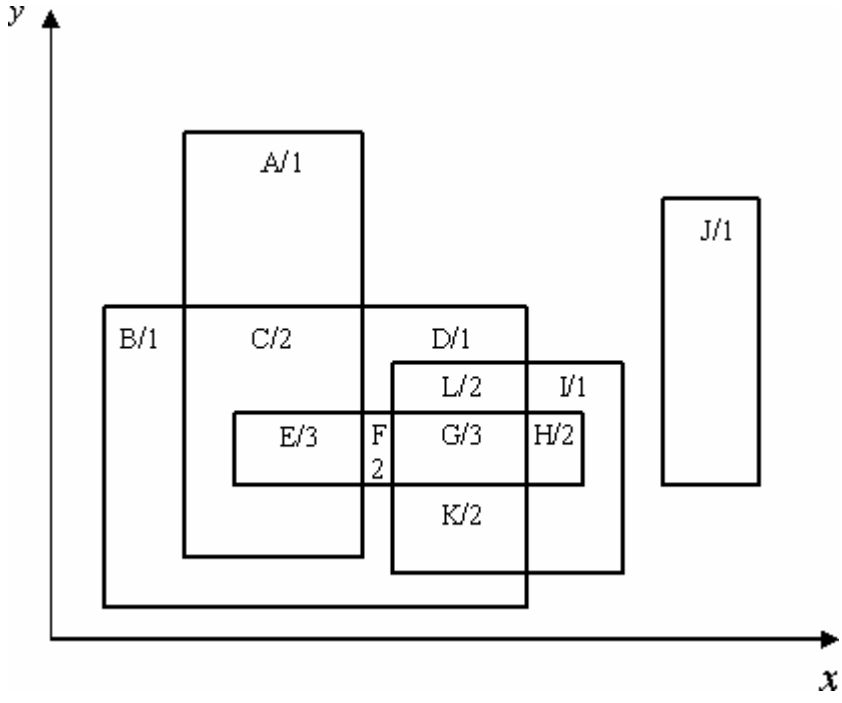
Consider a set of rectangles in $2D$ space as illustrated in the figure below. Overlapping or not, they define a set of regions with different shapes (in the example given, there are twelve regions, identified from **A** to **L**). Lets OD (Overlapping Depth) be the number of rectangles that overlap in each region (in the figure, OD is the number associated to each region). In this example, the maximum value of OD is 3 and it appears twice, in regions **E** and **G**.

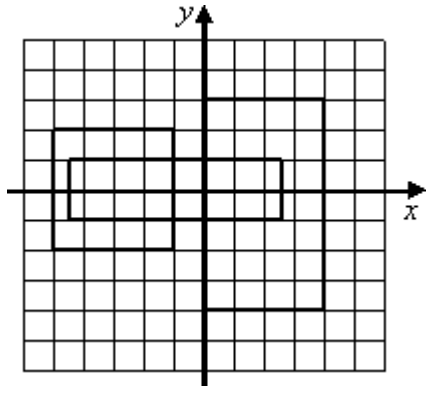


Write a program that given a set of rectangles, computes the total area of the regions with the maximum value OD_{MX} (this corresponds to the sum of the areas of region **E** and region **G** shown in the figure). In order to avoid numerical problems, it is ensured that there are no coincidences between edges of different rectangles.

Input

The first input line contains the number NR (integer format) of rectangles ($0 \leq NR \leq 100$). Each of the following NR lines contain the coordinates of two opposed vertices of a rectangle, in the sequence $x_1\ y_1\ x_2\ y_2$, separated by single spaces. In this case, no order is assumed for point 1 and point 2 and numbers may be written in integer or in decimal format. The separator between values is the space character.

The graphical representation of the sample input is as follows:



Output

One decimal number, rounded to two decimal digits, representing the computed area.

Sample Input

```
3
-5.00 -2.00 -1.0 2.0
2.5 -1 -4.5 1.0
4 3 0 -4
```

Sample Output

```
12.00
```