

Alpine Skiing

Believe it or not, the devices measuring time in alpine ski racing are not perfect. Instead of measuring the exact time, they measure an interval in which the ski racer finished the race (for example 53.42 sec - 53.45 sec).

The probability is distributed evenly on this interval. (More precisely, if we choose any two sub-intervals of equal length, the probability that the ski racer finished the race in each of these sub-intervals is equal. One can also say that each moment in the given interval has equal probability assigned to it, but this in fact says nothing since the probability for each moment is equal to zero (since there are infinitely many moments in the interval) no matter how we distribute the probability.)

And what if there are N ski racers? Then we have N intervals. Find the probability that the first ski racer on the list won the race (that is, finished the race with the minimal time).

Input

In the first line, there is an integer N ($1 \leq N \leq 300$).

In the next N lines, read the intervals assigned to the ski racers: two real numbers A_i and B_i in each line, representing the interval $[A_i, B_i]$ of the i -th ski racer. ($0 < A_i < B_i < 1000$)

Output

Print the required probability. The absolute difference between yours and official solution may be at most 10^{-6} .

Example

input

```
2
1.000 5.000
2.500 3.000
```

output

```
0.437500
```

input

```
4
3.500 17.300
12.700 21.200
2.900 15.000
1.000 20.000
```

output

```
0.263541
```