Task: TRO
Triangles

Stage III. Day one. Source file `tro.*` *02.04.2008*

Available memory: 32 MB.

n pairwise disjoint points in the plane are given ($n \geq 3$). There are $\frac{n \cdot (n-1) \cdot (n-2)}{6}$ triangles whose vertices are some pairwise different points among them (including degenerate triangles, i.e. ones whose vertices are collinear).

We want to calculate the sum of areas of all the triangles with vertices in the given points.

Those parts of the plane that belong to many triangles are to be calculated multiple times. We assume that the area of degenerate triangles (i.e. those with collinear vertices) is zero.

Task

Write a programme that:

- reads from the standard input the coordinates of the points in the plane,
- determines the sum of the areas of all the triangles with vertices in the given points,
- prints out the result to the standard output.

Input

In the first line of the standard input there is one integer n ($3 \leq n \leq 3\,000$) denoting the number of selected points. Each of the following n lines contains two integers x_i and y_i ($0 \leq x_i, y_i \leq 10\,000$) separated by a single space and denoting the coordinates of the i^{th} point (for $i = 1, 2, \ldots, n$). No pair (ordered) of coordinates appears more than once.

Output

In the first and only line of the standard output there should be one real number equal to the sum of the areas of all the triangles with vertices in the given points. The outcome should be printed out with exactly one digit after dot and should not differ from the correct value by more than 0.1.

Example

For the input data:

```
5
0 0
1 2
0 2
1 0
1 1
```

the correct result is:

```
7.0
```