

Contest Duration: 2025-08-09(Sat) 22:00 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20250809T2100&p1=248>) - 2025-08-09(Sat) 23:40 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20250809T2240&p1=248>) (local time) (100 minutes)

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E - Trapezium

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Time Limit: 4 sec / Memory Limit: 1024 MiB

Score : 475 points

Problem Statement

There are N points on a two-dimensional plane, with the i -th point at coordinates (X_i, Y_i) . It is guaranteed that no two points are at the same position, and no three points are collinear.

Among the combinations of four points from these points, how many combinations can form a trapezoid as a polygon with those four points as vertices?

Constraints

- $4 \leq N \leq 2\,000$
- $0 \leq X_i, Y_i \leq 10^7$ ($1 \leq i \leq N$)
- No two points are at the same location.
- No three points are collinear.
- All input values are integers.

Input

The input is given from Standard Input in the following format:

2026-01-02 (Fri)
05:28:22 +11:00

$$\begin{matrix} N \\ X_1 & Y_1 \\ \vdots \\ X_N & Y_N \end{matrix}$$

Output

Print the answer on one line.

Sample Input 1

[Copy](#)

```
5
0 2
0 5
1 0
2 1
2 4
```

[Copy](#)

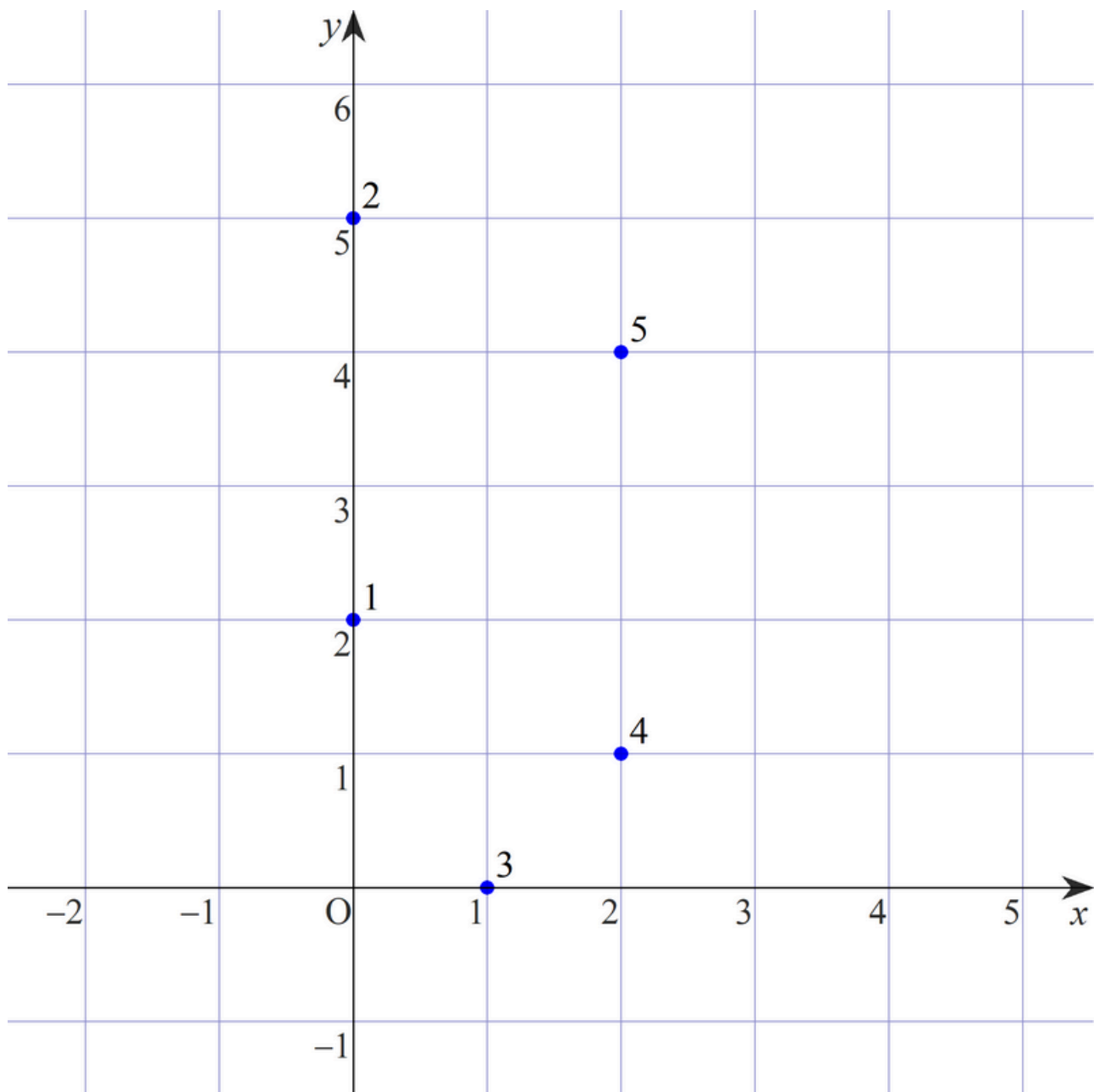
Sample Output 1

[Copy](#)

```
3
```

[Copy](#)

The given points are arranged as shown in the figure below.



Among the combinations of four points, the following three combinations can form a trapezoid as a polygon with those points as vertices:

- The 1st, 5th, 4th, 3rd points.
- The 1st, 3rd, 4th, 2nd points.
- The 1st, 2nd, 5th, 4th points.

Note that parallelograms and rectangles are also treated as trapezoids.

Sample Input 2

Copy

Copy

```
8
0 1
1 3
2 3
3 1
0 2
1 0
2 0
3 2
```

Sample Output 2

[Copy](#)

```
22
```

[Copy](#)

[/#telegram](#))

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