

# Problem 3625: Count Number of Trapezoids II

## Problem Information

**Difficulty:** Hard

**Acceptance Rate:** 13.50%

**Paid Only:** No

**Tags:** Array, Hash Table, Math, Geometry

## Problem Description

You are given a 2D integer array `points` where `points[i] = [xi, yi]` represents the coordinates of the `i`th point on the Cartesian plane.

Return `the number of unique trapezoids` that can be formed by choosing any four distinct points from `points`.

A **trapezoid** is a convex quadrilateral with **at least one pair** of parallel sides. Two lines are parallel if and only if they have the same slope.

**Example 1:**

**Input:** `points = [[-3,2],[3,0],[2,3],[3,2],[2,-3]]`

**Output:** 2

**Explanation:**





There are two distinct ways to pick four points that form a trapezoid:

\* The points `[-3,2], [2,3], [3,2], [2,-3]` form one trapezoid. \* The points `[2,3], [3,2], [3,0], [2,-3]` form another trapezoid.

**Example 2:**

**\*\*Input:\*\*** points = [[0,0],[1,0],[0,1],[2,1]]

**\*\*Output:\*\*** 1

**\*\*Explanation:\*\***



There is only one trapezoid which can be formed.

**\*\*Constraints:\*\***

\* `4 <= points.length <= 500` \* `-1000 <= xi, yi <= 1000` \* All points are pairwise distinct.

## Code Snippets

### C++:

```
class Solution {
public:
    int countTrapezoids(vector<vector<int>>& points) {

    }
};
```

### Java:

```
class Solution {
    public int countTrapezoids(int[][] points) {

    }
}
```

### Python3:

```
class Solution:
    def countTrapezoids(self, points: List[List[int]]) -> int:
```