



5868. Number of Pairs of Interchangeable Rectangles

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You are given n rectangles represented by a **0-indexed** 2D integer array `rectangles`, where `rectangles[i] = [widthi, heighti]` denotes the width and height of the i^{th} rectangle.

Two rectangles i and j ($i < j$) are considered **interchangeable** if they have the **same** width-to-height ratio. More formally, two rectangles are **interchangeable** if $\text{width}_i/\text{height}_i == \text{width}_j/\text{height}_j$ (using decimal division, not integer division).

Return the **number** of pairs of **interchangeable** rectangles in `rectangles`.

User Accepted: 0

User Tried: 0

Total Accepted: 0

Total Submissions: 0

Difficulty: Medium

Example 1:

Input: `rectangles = [[4,8],[3,6],[10,20],[15,30]]`**Output:** 6**Explanation:** The following are the interchangeable pairs of rectangles by index (0-indexed):

- Rectangle 0 with rectangle 1: $4/8 == 3/6$.
- Rectangle 0 with rectangle 2: $4/8 == 10/20$.
- Rectangle 0 with rectangle 3: $4/8 == 15/30$.
- Rectangle 1 with rectangle 2: $3/6 == 10/20$.
- Rectangle 1 with rectangle 3: $3/6 == 15/30$.
- Rectangle 2 with rectangle 3: $10/20 == 15/30$.

Example 2:

Input: `rectangles = [[4,5],[7,8]]`**Output:** 0**Explanation:** There are no interchangeable pairs of rectangles.

Constraints:

- $n == \text{rectangles.length}$
- $1 \leq n \leq 10^5$
- $\text{rectangles}[i].\text{length} == 2$
- $1 \leq \text{width}_i, \text{height}_i \leq 10^5$

JavaScript




```

1 const ll = BigInt;
2 const combination = (m, n) => { return factorial(m, n) / factorial(n, n); };
3 const factorial = (m, n) => { let num = 1n; let cnt = 0; for (let i = ll(m); i > 0; i--) { if (cnt == n)
  break; num *= i; cnt++; } return num; };
4
5 const interchangeableRectangles = (rectangles) => {
6   let m = new Map(), res = 0n;
7   for (const [w, h] of rectangles) {
8     let tmp = w / h;
9     m.set(tmp, m.get(tmp) + 1 || 1);
10  }
11  // pr(m);
12  for (const [, occ] of m) {
13    res += combination(occ, 2);
14  }

```

```
15     return res;  
16 };
```

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