Problem I. Laser

Input file:	standard input
Output file:	standard output
Time limit:	1 second
Memory limit:	512 megabytes

There are n enemies on a two-dimensional plane, and the position of the i-th enemy is (x_i,y_i)

You now have a laser weapon, which you can place on any grid (x, y)(x, y are real numbers) , and the weapon fires a powerful laser that for any real number k, enemies at coordinates $(x + k, y), (x, y + k), (x + k, y + k), (x + k, y - k)$ will be destroyed.

You are now wondering if it is possible to destroy all enemies with only one laser weapon.

Input

The first line of input is a positive integer $T(T \leq 10^5)$ representing the number of data cases.

For each case, first line input a positive integer n to represent the position of the enemy.

Next n line, the i-th line inputs two positive integers $x_i, y_i(-10^8 \leq x_i, y_i \leq 10^8)$ represents the position of the i-th enemy.

The data guarantees that the sum of n for each test case does not exceed 500,000

Output

For each cases, If all enemies can be destroyed with one laser weapon, output "YES otherwise output "NO"(not include quotation marks).

Example

standard input	standard output
2 6 1 1 1 3 2 2 3 1 3 3 3 4 7 1 1 1 3 2 2 3 1 3 3 1 4 3 4	YES NO