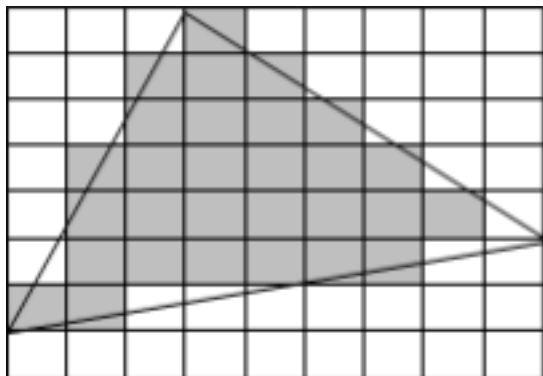You are given the coordinates of a triangle lying on a 2D Cartesian plane. The whole plane can be divided into square blocks of 1×1 size. Your job is to find out how many of the 1×1 square blocks have at least 50% of its area inside the triangle.

The picture below shows a triangle where the vertices are at $(0, 1)$, $(9, 3)$ and $(3, 8)$. And the shaded squares are the squares with at least 50

Input

The first line of the input contains an integer T (≤ 100) denoting the number of test cases. Each of the following T lines contain six space separated integers x_1 y_1 x_2 y_2 x_3 y_3 giving the coordinates of the triangle. The given coordinates will form a valid triangle with positive area and all the coordinates will be integers having values between 0 and 100 (inclusive).

Output

For each input, print the output in the format 'Case X: Y' (here, X is the serial of the input and Y is the number of squares which have at least 50% of its area inside the triangle).

Sample Input

```
2
0 1 9 3 3 8
1 1 4 1 1 4
```

Sample Output

```
Case 1: 29
Case 2: 6
```