A spiral on a grid of size $(2n + 1) \times (2n + 1)$ has been constructed as follows. Number 1 is in the center square at $(0, 0)$, number 2 is to the right of it at $(1, 0)$, and then we continue place the positive integers in order along the spiral in counterclockwise fashion. Now, given 2 coordinates indicating 2 corners of a rectangle, find the sum of all numbers in the enclosing rectangle.

See the figure on the right for example.

Input

A number of of inputs (≤ 100), each starting with line contains two integers n ($1 \leq n \leq 10^9$) and q ($1 \leq q \leq 100$): the size of the grid and the number of queries.

After this, there are lines, each containing four integers (x_1, y_1) and (x_2, y_2) in that order, where $-n \leq x_1, y_1, x_2, y_2 \leq n$. This is the 2 corners of the rectangle, in cartesian 2D coordinates.

See the diagram, 1 is at the center at $(0, 0)$.

Output

For each input, output the answer *modulo* 1000000007.

Sample Input

```
2 3
0 -2 1 1
-1 0 1 0
1 2 1 2
```

Sample Output

```
74
9
14
```