# Problem F. Folding

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|---|---|
| Input file: | stdin |
| Output file: | stdout |
| Time limit: | 2 seconds |
| Memory limit: | 256 megabytes |

Little boy Alex likes origami very much. He spends days and nights folding weird figures from sheets of paper. When Alex starts to fold a new figure, he does the following:

- He takes a square sheet of paper of size $n \times n$ and puts it into a Cartesian plane so that the center of the square is located at the origin $(0, 0)$ and sheet edges are parallel to the axes.
- After that he makes several folds.

When making a fold, he chooses an **oriented** line $l$, takes the part of the figure located to the left of $l$ and puts it above the part of the figure located to the right of $l$ by folding it over $l$. For more details refer to the input format.

After making $k$ folds, Alex wonders what percentage the resulting figure area is of the initial area of the square sheet. Help him find that out.

## Input

The first line of input contains two integers $n$ and $k$ ($1 \le n \le 100$, $1 \le k \le 5$), the side length of the original square sheet of paper and the number of folds made by Alex.

The following $k$ lines describe the folds. Each description consists of four integers $x_1, y_1, x_2, y_2$ ($-100 \le x_1, x_2, y_1, y_2 \le 100$) that define an **oriented** fold line $l$. It is guaranteed that the points $(x_1, y_1)$ and $(x_2, y_2)$ are distinct.

The left part of the figure is put onto the right part of the figure. To decide which side is left and which side is right, one must imagine himself standing at the point $(x_1, y_1)$ looking in the direction of the point $(x_2, y_2)$, the left hand side would define the left part and the right-hand side would define the right part. Note that by this definition the order of points $(x_1, y_1)$ and $(x_2, y_2)$ matters.

It is possible that the fold line $l$ does not intersect the figure at all. This case is handled naturally: if the figure is located to the left of $l$, it is reflected (mirrored) over the folding line, and if it is located to the right of $l$, nothing happens.

## Output

The first line of output must contain a single integer between 0 and 100 defining which percentage the resulting figure area is of the intitial sheet of paper area.

Your answer will be considered correct if it differs from the actual fraction (not rounded to the integer number of percents) by no more than 1%.

## Examples

| stdin | stdout |
|---|---|
| 10 3<br>0 0 5 5<br>0 0 0 5<br>-5 5 -5 -5 | 38 |
| 10 1<br>-5 -5 1 4 | 67 |