

Task 6

Routes to School

Task

Taro lives in JOI city where the avenues and streets run like the grid of a go board. There are a straight avenues from south to north and b straight streets from west to east.

Each of a avenues from south to north is numbered $1, 2, \dots, a$ from west to east, and each of b streets from west to east is numbered $1, 2, \dots, b$ from south to north. The i -th avenue from the west and the j -th street from the south intersects at the crossing (i, j) .

Taro lives near the crossing $(1, 1)$ and goes to JOI high school near the crossing (a, b) by bicycle. A bicycle can move only along avenues and streets. When Taro goes to the high school, he moves only to the east or to the north because he wants to shorten the commute time to school.

Now, JOI city is performing roadwork at the n crossings $(x_1, y_1), (x_2, y_2), \dots, (x_n, y_n)$. Taro can not pass through the crossing where roadwork is being performed.

How many routes are there for Taro to go school by moving from the crossing $(1, 1)$ to the crossing (a, b) and by keeping away from the crossings where roadwork is being performed? Write a program which calculates the number m of routes to school for Taro.

Input

The first line of the input file contains two space-separated integers a , the number of avenues from south to north, and b , the number of streets from west to east. The integers a, b satisfy $1 \leq a, b \leq 16$.

The second line contains an integer n , the number of crossings where the roadwork is performed, satisfying $1 \leq n \leq 40$.

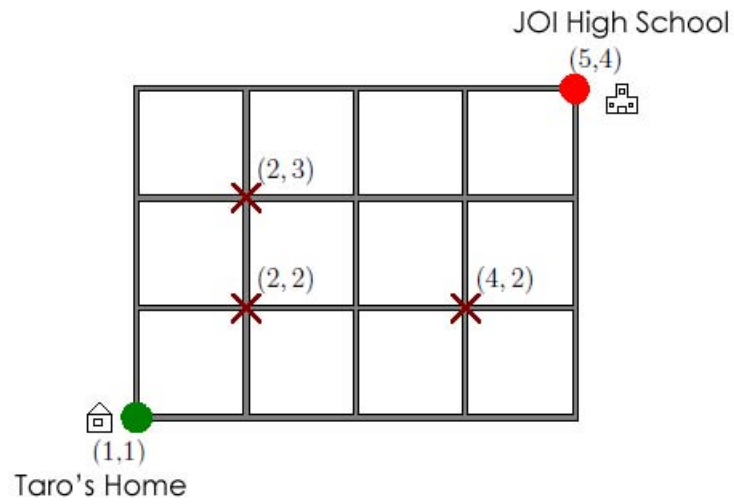
The $(2 + i)$ -th line ($1 \leq i \leq n$) describes the position of the i -th crossing where the roadwork is performed, and contains 2 space separated integers x_i, y_i . This means roadwork is performed at the crossing (x_i, y_i) . The integers x_i, y_i satisfy $1 \leq x_i, y_i \leq 16$.

Output

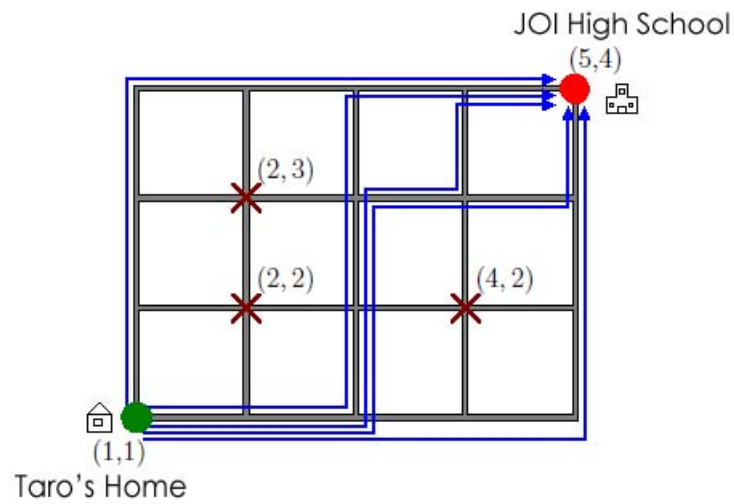
You should submit the output file which consists of one line, and the line should contain the number m of routes to school for Taro.

Example

The following picture illustrates the case of $a = 5, b = 4, n = 3$, and roadwork is performed at the crossings $(2, 2), (2, 3), (4, 2)$.



There are 5 routes to school for Taro. The following picture illustrates all of them.



Sample inputs and outputs

input

5 4
3
2 2
2 3
4 2

output

5