# D: **Radiation Alert in Rabbitland**

Source file name: `radiation.c`, `radiation.cpp`, *or* `radiation.java`
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A radiation source was recently discovered by some scientists of Rabbitland while they were digging a burrow. Immediately, King Rabbit ordered the reinforcement of Rabbitland's boundary using lead barriers, and the installation of some additional lead barriers inside Rabbitland. Rabbitland's boundary is defined with a polygon, and each lead barrier is described with a line segment.
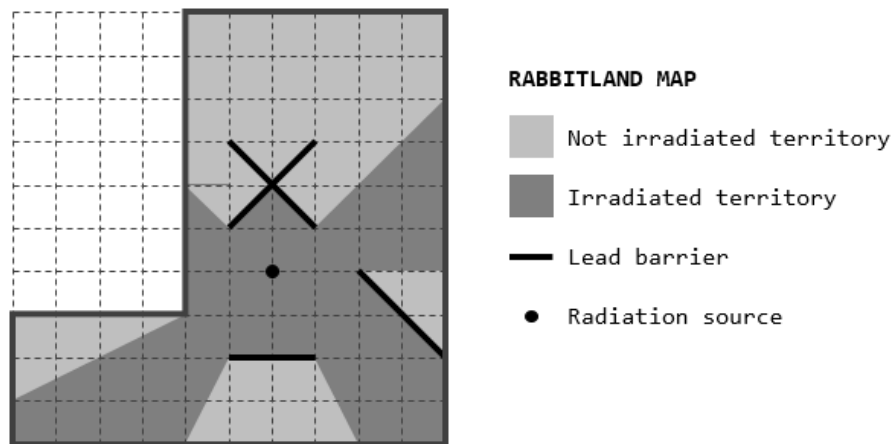
Each lead barrier blocks the radiation, protecting some regions inside Rabbitland. You have been hired by King Rabbit to calculate the percentage of Rabbitland's territory that is being irradiated by the radiation source.

Input

The input consists of several test cases. The first line of a test case contains two blank-separated integers N and M, where N is the number of vertices of the polygon describing the boundary of Rabbitland ($3 \leq N \leq 16$), and M is the number of additional barriers installed inside Rabbitland ($0 \leq M \leq 20$). The second line of a test case contains two blank-separated integers x_S and y_S ($0 \leq x_S, y_S \leq 25$) indicating the position (x_S, y_S) where the radiation source was discovered. Then follow N lines: line i contains exactly two blank-separated integers x_i and y_i, where (x_i, y_i) is the position of the i-th vertex of the polygon describing the boundary of Rabbitland ($0 \leq x_i, y_i \leq 25$). Finally follow M lines: line j contains exactly four blank-separated integers x_{1j}, y_{1j}, x_{2j} and y_{2j}, where (x_{1j}, y_{1j}) and (x_{2j}, y_{2j}) are the positions of the endpoints of the line segment that describes the j-th additional lead barrier installed inside Rabbitland ($0 \leq x_{1j}, y_{1j}, x_{2j}, y_{2j} \leq 25$, ($x_{1j}, y_{1j}$) $\neq$ (x_{2j}, y_{2j})). You may assume that the radiation source and every lead barrier are completely inside the polygon including its boundary.

The input must be read from standard input.

Output

For each test case, print a single line with a number indicating the percentage of Rabbitland's territory that is being irradiated by the radiation source, followed by the percentage sign ('%'). The answer should be formatted and approximated to three decimal places. The floating point delimiter must be '.' (i.e., the dot). The rounding applies towards the *nearest neighbor* unless both neighbors are equidistant, in which case the result is rounded up (e.g., 78.3712 is rounded to 78.371; 78.5766 is rounded to 78.577; 78.3745 is rounded to 78.375, etc.).

The output must be written to standard output.

Sample Input	Sample Output
6 4	50.000%
6 6	75.000%
4 0	100.000%
10 0	
10 10	
0 10	
0 7	
4 7	
5 8 7 8	
5 5 7 3	
5 3 7 5	
8 6 10 8	
4 3	
2 2	
0 0	
0 4	
4 4	
4 0	
0 1 4 1	
1 1 3 1	
1 2 3 2	
4 1	
0 0	
0 0	
4 0	
4 4	
0 4	
0 0 4 4	