10: Sovereign Sinterklaas

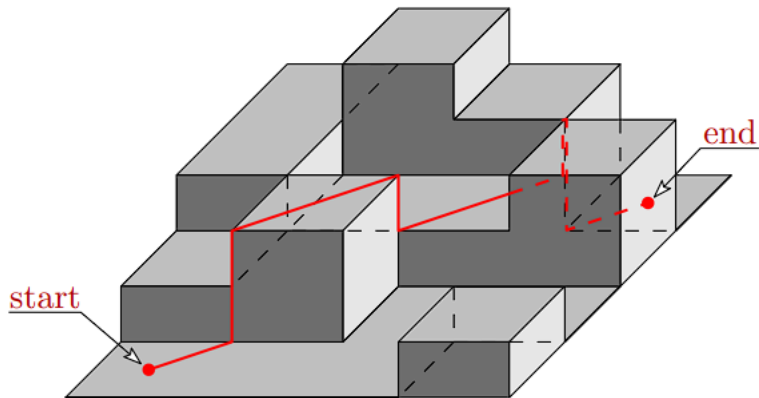**Level:** Medium
Time limit: 3 seconds

Sinterklaas decides to take matters into his own hand to deliver the last package of the night. He needs to make it from the starting position at point (S_x, S_y) to the chimney at point (S_x, S_y). Unfortunately for him, the path he wants to take is not a flat surface like the rest of the Netherlands. Instead, his path goes over a bunch of (flat) houses with differing heights. Sinterklaas's path is modelled as a polyline – a sequence of straight horizontal and vertical segments, where the end point of one segment is the start point of the next segment. The basic path properties are:

- Each point on the path is on the surface of at least one block.

- No part of the path is in the interior of any block.

- The height of any point on the path is bigger than or equal to the lowest height of roofs of all blocks to which surface the point belongs.

- The path starts and ends in the centre of a block roof.

- The sum over the lengths of horizontal segments of the path is the minimum possible.

It may happen that two consecutive segments on the path share common points. This stems from the fact that the path models a real behaviour of a person moving over physical obstacles. Thus, an additional path rule also holds:

- Let P be a point on the path. If there is a point Q directly above P, and Q belongs to at least two blocks, then the point Q is on the path.

The total length of Sinterklaas's path should be carefully calculated, so he knows how fast he needs to go to finish delivering before the night ends.

Input

The first line of the input contains six positive integers $W, H, S_x, S_y, E_x, E_y (1 \leq W \cdot H \leq 10^5, 1 \leq S_x, E_x \leq W, 1 \leq S_y, E_y \leq H)$. W and H are even integers representing the dimensions of the grid base in meters, integers S_x, S_y denote starting coordinates of the escape path and E_x, E_y denote coordinates of the end. Each of the next $H/2$ lines contains $W/2$ integers, the i-th integer on j-th line is the height of the corresponding block $T_{i,j}$ in meters $(0 \leq T_{i,j} \leq 103)$. Each grid block base is a square with dimensions of 2 × 2 meters in the model.

Output

Print the length of Sinterklaas's path. The difference between the printed length and the exact length must be less than 10^{-4}.

Sample input 1

```
8 8 1 7 7 1
2 3 2 0
2 1 1 2
1 2 0 0
0 0 0 1
```

Sample output 1

```
14.485281374238
```