


[All Contests](#) > [Week of Code - 17](#) > [Cross the River](#)

# Cross the River


 Authored by [zxqfd555](#) on Jul 11 2015

[Problem](#)
[Submissions](#)
[Leaderboard](#)
[Discussions](#)

Your submission will run against only preliminary test cases. Full test cases will run at the end of the day.

## Problem Statement

You're standing on a shore of a river. You'd like to reach the opposite shore.

The river can be described with two straight lines on the Cartesian plane, describing the shores. The shore you're standing on is  $Y = 0$  and another one is  $Y = H$ .

There are some rocks in the river. Each rock is described with its coordinates and the number of points you'll gain in case you step on this rock.

You can choose the starting position arbitrarily on the first shore. Then, you will make jumps. More precisely, you can jump to the position  $(X_2, Y_2)$  from the position  $(X_1, Y_1)$  in case  $|Y_2 - Y_1| \leq dH$ ,  $|X_2 - X_1| \leq dW$  and  $Y_2 > Y_1$ . You can jump only on the rocks and the shores.

What is the maximal sum of scores of all the used rocks you can obtain so that you cross the river, i.e. get to the opposite shore?

## Input Format

The first line contains four single space-separated integer numbers,  $N, H, dH, dW$ , denoting the number of rocks, the distance to the opposite shore, and the jump parameters  $dW$  and  $dH$ , respectively.

Each of the following  $N$  lines describe the rocks in the format  $Y_i X_i Z_i$ , where  $Y_i$  and  $X_i$  are the coordinates of the rock and  $Z_i$  is the number of points you'll gain in case you'll jump at this rock.

## Constraints

$$1 \leq N \leq 10^5$$

$$1 \leq H \leq 10^7$$

$$1 \leq dH < H$$

$$1 \leq dW \leq 10^5$$

$$1 \leq Y_i < H$$

$$0 \leq X_i \leq 10^5$$

$$-10^4 \leq Z_i \leq 10^4$$

No two rocks share the same position.

There is always at least one way to cross the river.

## Output Format

Output the maximum possible score on a single line.

## Sample Input

```
5 10 3 3
2 2 7
2 3 5
5 5 -1
8 3 10
8 8 12
```



## Sample Output

18

**Explanation**

Initially, move to the position  $(2, 0)$ . Then, jump the the fist rock. That grants you **7** points. Then, jump the the third rock, which brings you  $-1$  point. Then, jump to the fith rock, netting you **12** points.

In total, you'll have  $7 + (-1) + 12 = 18$  points. This is the best possible course of action you may take.

**2 hackers** have submitted code**Max Score:** 80**Difficulty:** Difficult Share Download PDF Suggest EditsCurrent Buffer (saved locally, editable)  Python 2 

```
1 # Enter your code here. Read input from STDIN. Print output to STDOUT
```

Line: 1 Col: 1

 [Upload Code as File](#)

Test against custom input

Run Code

Submit Code

Join us on IRC at [#hackerrank](#) on freenode for hugs or bugs.[Contest Calendar](#) | [Blog](#) | [Scoring](#) | [Environment](#) | [FAQ](#) | [About Us](#) | [Support](#) | [Careers](#) | [Privacy Policy](#) | [Request a Feature](#)