Problem E

Bee Tower

There are N towers in Bee Land known as Bee Towers. These towers are located in a straight line and the height may vary between one tower and the other.

Jolly is a unique bee, even though he is very smart and strong, he can't fly. Jolly can jump from one point to any other point if the destination height is not H higher than his current height and no farther than W width away. He can jump to any point that is lower than his initial point given the horizontal W still can be reached. Jolly can only jump from one tower to its adjacent tower(s). He cannot jump and skip a tower even though the destination is within his reach. Note that he can only jump to/from ground or the top of each tower.

In Bee Land, the highest towers (might be more than one) are considered sacred. Jolly loves high place and he wants to reach the top of (any) sacred tower. Initially he's at the ground, and in order to reach the top of highest tower he might need to jump to several lower and reachable towers before he could reach the highest one. He's able to jump to any tower in the land from the ground if the tower's height is no more than H.

For example, let there be 5 towers located at 5, 7, 8, 12 and 13 with height 3, 5, 8, 5 and 3 respectively as shown in Figure 1. As you can see, there is only one highest tower which is the third tower which has height 8. If H = 3 and W = 2, then Jolly can jump from the ground to first tower, and then to second tower, and finally reach the third which is the highest tower. He can't reach third tower by jumping from fifth tower as from the fourth to the third tower, the horizontal distance is 4 which is more than W = 2.

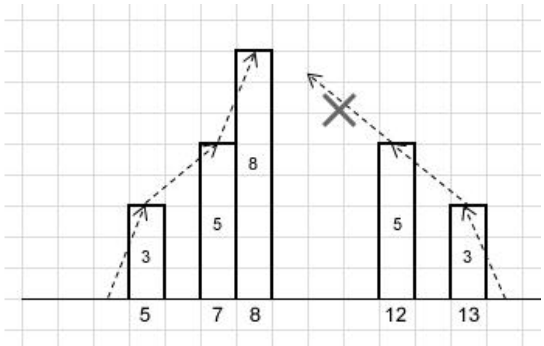

Figure 1

Did we mention that Jolly is strong? Jolly could move the towers such that the horizontal distance between towers are not more than W. There are some restrictions though when moving towers:

- He cannot move a tower pass through another tower (the tower order must remain).
- The sacred towers cannot be moved.

The cost of moving a tower is equal to the move distance multiplied by the tower's height, e.g. moving a tower of height 10 from position 3 to position 7 will cost (7 - 3) * 10 = 40.

For example, let there be 5 towers located at 2, 5, 8, 13 and 14 with height 4, 3, 6, 5 and 9 respectively as shown in Figure 2.

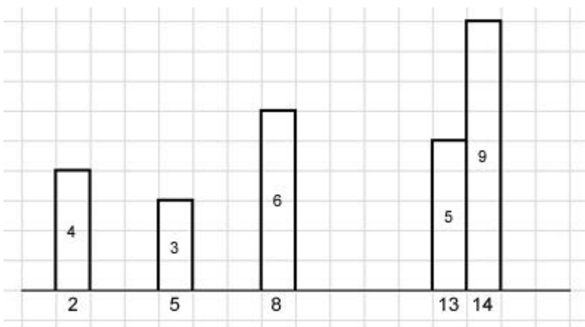

Figure 2

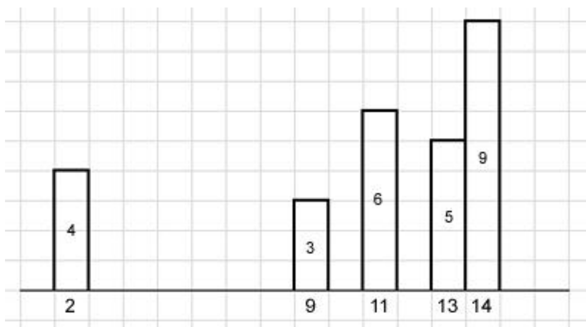

Figure 3

The highest tower is the 5th tower with height 9. Let H = 4 and W = 2. With such H and W, Jolly cannot reach the highest tower without moving any tower. One possible solution is to move 3rd tower from 8 to 11 and 2nd tower from 5 to 9, so he can reach the highest tower from the 2nd tower (Figure 3). The cost of that solution is = moving 3rd tower + moving 2nd tower = (11 - 8) * 6 + (9 - 5) * 3 = 18 + 12 = 30.

There is another solution by moving the 4th tower from 13 to 12, the 3rd tower from 8 to 10 and the 2nd tower from 5 to 8 as shown in Figure 4. The cost of this solution is = moving 4th tower + moving 3rd tower + moving 2nd tower = (13 - 12) * 5 + (10 - 8) * 6 + (8 - 5) * 3 = 5 + 12 + 9 = 26; which has a smaller cost than the previous solution.

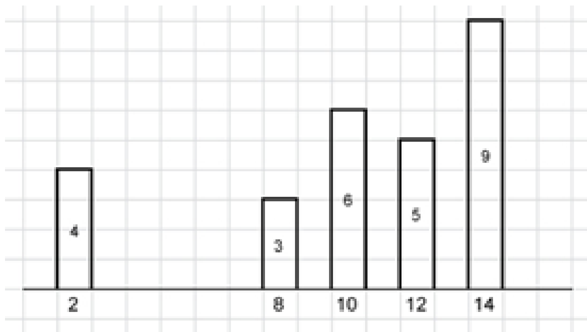

Figure 4

Given the location and height of all towers in Bee Land, your task is to determine the minimal cost needed for Jolly to reach the top of (any) sacred tower. If it's not possible for Jolly to reach any sacred tower, output -1.

Input

The first line of input contains an integer T (T ≤ 50) denoting the number of cases. The first line of each case contains three integers N (1 ≤ N ≤ 50), H (1 ≤ H ≤ 500) and W (1 ≤ W ≤ 100) denoting the number of towers, H and W as defined in the problem statement respectively. The next N lines each contains two integer p_i and h_i ($1 \le p_i, h_i \le 500$) denoting the position and the height of i^{th} tower.

Output

For each case, output "`Case #X: Y`", where `X` is case number starts from 1 and `Y` is the minimum cost required for Jolly to reach the top of (any) sacred tower, or -1 if it's not possible to do so.

Sample Input	Output for Sample Input
4 5 4 2 2 4 5 3 8 6 13 5 14 9 2 4 10 5 3 6 100 6 3 1 1 3 2 6 3 9 4 4 5 7 6 10 4 6 2 1 8 4 5 10 5 14 8	Case #1: 26 Case #2: -1 Case #3: 0 Case #4: 5

Explanation for 4th sample input.
There are two sacred towers: 1st and 4th tower. Reaching the 1st tower costs less as he only needs to move the 2nd tower with height 5 one position to the left in order to reach the 1st tower.