

3111. Minimum Rectangles to Cover Points

Description

You are given a 2D integer array `points`, where `points[i] = [xi, yi]`. You are also given an integer `w`. Your task is to **cover all** the given points with rectangles.

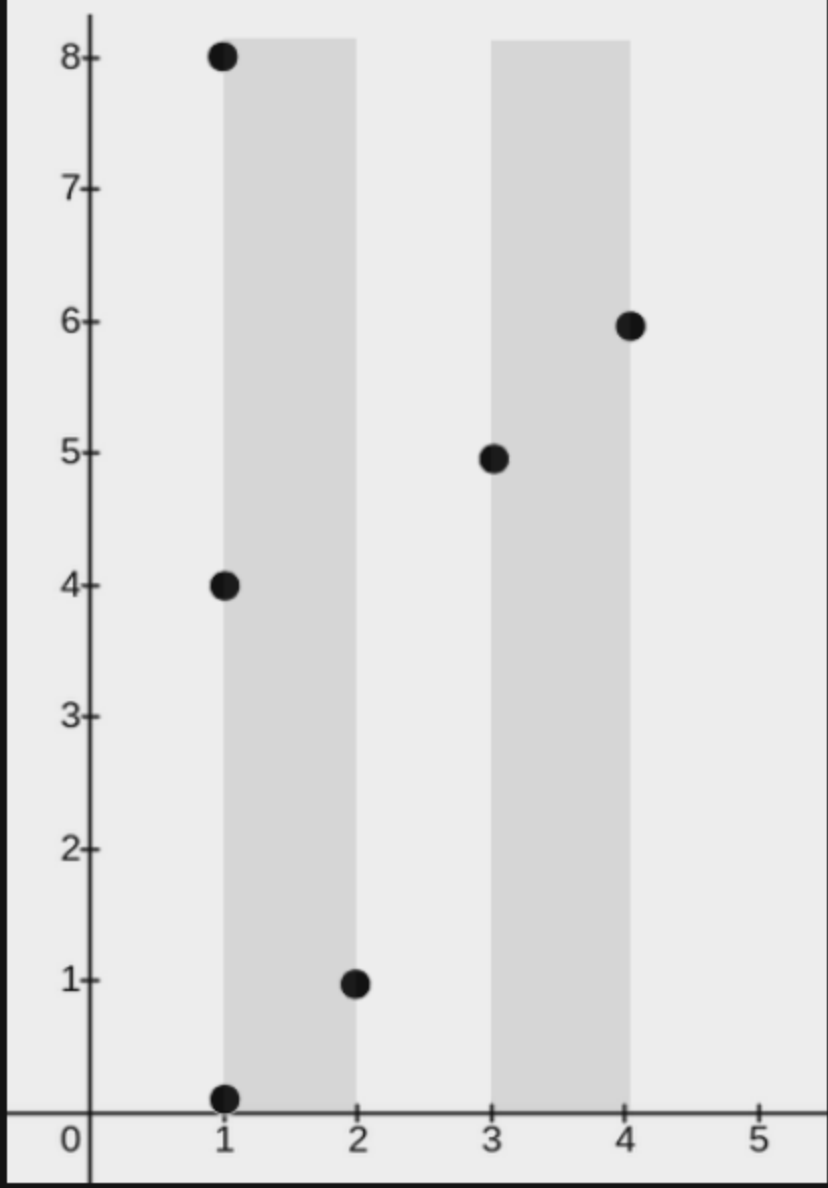
Each rectangle has its lower end at some point `(x1, 0)` and its upper end at some point `(x2, y2)`, where `x1 <= x2`, `y2 >= 0`, and the condition `x2 - x1 <= w` **must** be satisfied for each rectangle.

A point is considered covered by a rectangle if it lies within or on the boundary of the rectangle.

Return an integer denoting the **minimum** number of rectangles needed so that each point is covered by **at least one** rectangle.

Note: A point may be covered by more than one rectangle.

Example 1:



Input: `points = [[2,1],[1,0],[1,4],[1,8],[3,5],[4,6]]`, `w = 1`

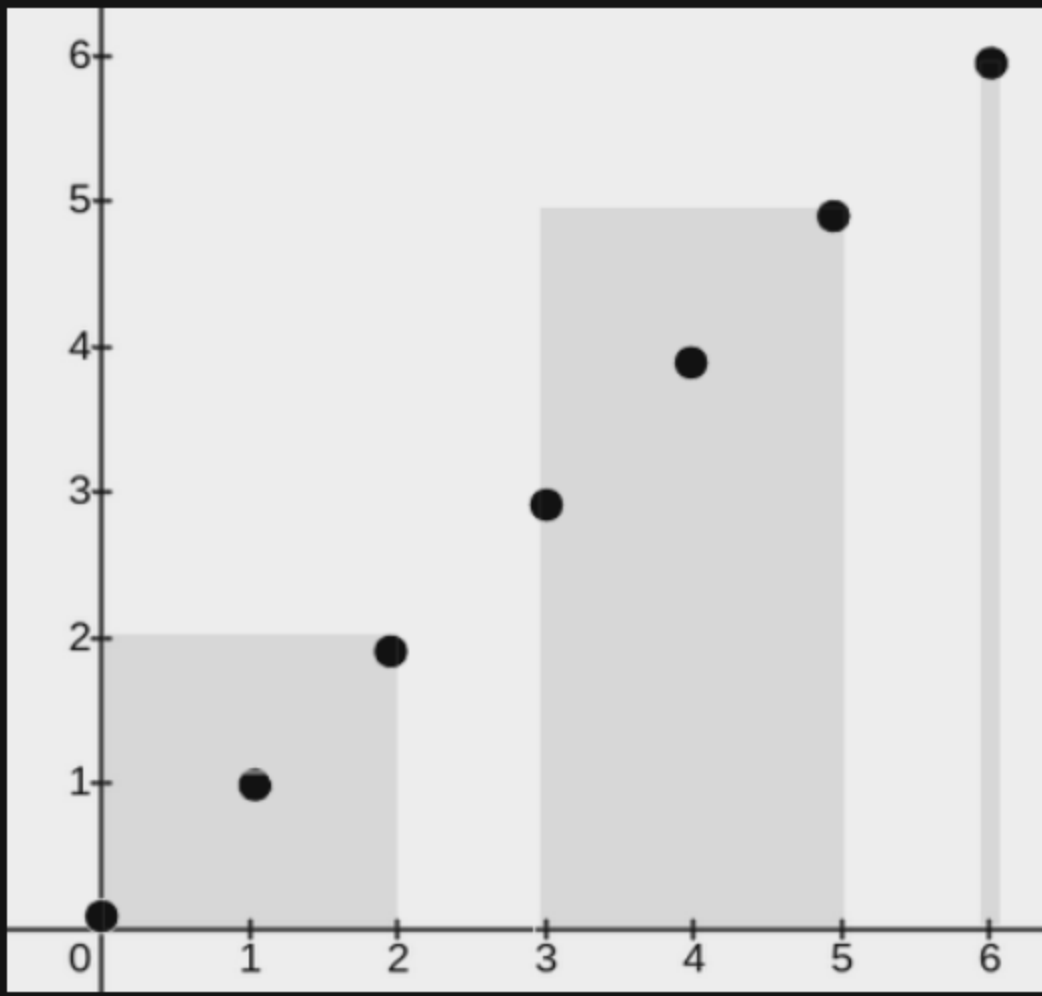
Output: `2`

Explanation:

The image above shows one possible placement of rectangles to cover the points:

- A rectangle with a lower end at `(1, 0)` and its upper end at `(2, 8)`
- A rectangle with a lower end at `(3, 0)` and its upper end at `(4, 8)`

Example 2:



Input: `points = [[0,0],[1,1],[2,2],[3,3],[4,4],[5,5],[6,6]]`, `w = 2`

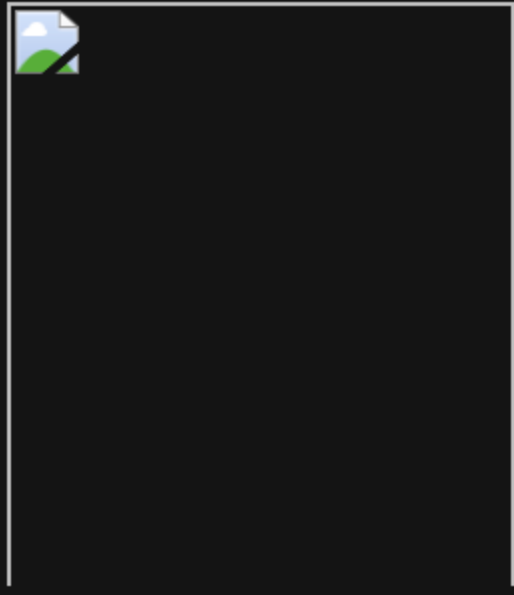
Output: `3`

Explanation:

The image above shows one possible placement of rectangles to cover the points:

- A rectangle with a lower end at `(0, 0)` and its upper end at `(2, 2)`
- A rectangle with a lower end at `(3, 0)` and its upper end at `(5, 5)`
- A rectangle with a lower end at `(6, 0)` and its upper end at `(6, 6)`

Example 3:



Input: `points = [[2,3],[1,2]]`, `w = 0`

Output: `2`

Explanation:

The image above shows one possible placement of rectangles to cover the points:

- A rectangle with a lower end at `(1, 0)` and its upper end at `(1, 2)`
- A rectangle with a lower end at `(2, 0)` and its upper end at `(2, 3)`

Constraints:

- `1 <= points.length <= 105`
- `points[i].length == 2`
- `0 <= xi == points[i][0] <= 109`
- `0 <= yi == points[i][1] <= 109`
- `0 <= w <= 109`
- All pairs `(xi, yi)` are distinct.

