# Problem 475: Heaters

## Problem Information

**Difficulty:** Medium
**Acceptance Rate:** 40.90%
**Paid Only:** No
**Tags:** Array, Two Pointers, Binary Search, Sorting

## Problem Description

Winter is coming! During the contest, your first job is to design a standard heater with a fixed warm radius to warm all the houses.

Every house can be warmed, as long as the house is within the heater's warm radius range.

Given the positions of `houses` and `heaters` on a horizontal line, return _the minimum radius standard of heaters so that those heaters could cover all houses._

**Notice** that all the `heaters` follow your radius standard, and the warm radius will be the same.

**Example 1:**

**Input:** houses = [1,2,3], heaters = [2] **Output:** 1 **Explanation:** The only heater was placed in the position 2, and if we use the radius 1 standard, then all the houses can be warmed.

**Example 2:**

**Input:** houses = [1,2,3,4], heaters = [1,4] **Output:** 1 **Explanation:** The two heaters were placed at positions 1 and 4. We need to use a radius 1 standard, then all the houses can be warmed.

**Example 3:**

**Input:** houses = [1,5], heaters = [2] **Output:** 3

**Constraints:**

* `1 <= houses.length, heaters.length <= 3 * 104` * `1 <= houses[i], heaters[i] <= 109`

## Code Snippets

**C++:**

```
class Solution {
public:
int findRadius(vector<int>& houses, vector<int>& heaters) {

}
};
```

**Java:**

```
class Solution {
public int findRadius(int[] houses, int[] heaters) {

}
}
```

**Python3:**

```
class Solution:
def findRadius(self, houses: List[int], heaters: List[int]) -> int:
```