

1891. Cutting Ribbons

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You are given an integer array `ribbons`, where `ribbons[i]` represents the length of the i^{th} ribbon, and an integer `k`. You may cut any of the ribbons into any number of segments of **positive integer** lengths, or perform no cuts at all.

- For example, if you have a ribbon of length `4`, you can:
 - Keep the ribbon of length `4`,
 - Cut it into one ribbon of length `3` and one ribbon of length `1`,
 - Cut it into two ribbons of length `2`,
 - Cut it into one ribbon of length `2` and two ribbons of length `1`, or
 - Cut it into four ribbons of length `1`.

Your goal is to obtain `k` ribbons of all the **same positive integer length**. You are allowed to throw away any excess ribbon as a result of cutting.

Return the ***maximum*** possible positive integer length that you can obtain `k` ribbons of, or `0` if you cannot obtain `k` ribbons of the same length.

Example 1:

Input: `ribbons = [9,7,5]`, `k = 3`
Output: `5`
Explanation:
– Cut the first ribbon to two ribbons, one of length 5 and one of length 4.
– Cut the second ribbon to two ribbons, one of length 5 and one of length 2.
– Keep the third ribbon as it is.
Now you have 3 ribbons of length 5.

Example 2:

Input: `ribbons = [7,5,9]`, `k = 4`
Output: `4`
Explanation:
– Cut the first ribbon to two ribbons, one of length 4 and one of length 3.
– Cut the second ribbon to two ribbons, one of length 4 and one of length 1.
– Cut the third ribbon to three ribbons, two of length 4 and one of length 1.
Now you have 4 ribbons of length 4.

Example 3:

Input: `ribbons = [5,7,9]`, `k = 22`
Output: `0`
Explanation: You cannot obtain `k` ribbons of the same positive integer length.

Constraints:

- `1 <= ribbons.length <= 105`
- `1 <= ribbons[i] <= 105`
- `1 <= k <= 109`

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Hide Hint 1

Use binary search on the answer.

Hide Hint 2

You can get l/m branches of length m from a branch with length l .

```
1class Solution {
2    public int maxLength(int[] ribbons, int k) {
3
4    }
5}
```