Problem 3560: Find Minimum Log Transportation Cost

Problem Information

Difficulty: Easy
Acceptance Rate: 41.88%
Paid Only: No
Tags: Math

Problem Description

You are given integers `n`, `m`, and `k`.

There are two logs of lengths `n` and `m` units, which need to be transported in three trucks where each truck can carry one log with length **at most** `k` units.

You may cut the logs into smaller pieces, where the cost of cutting a log of length `x` into logs of length `len1` and `len2` is `cost = len1 * len2` such that `len1 + len2 = x`.

Return the **minimum total cost** to distribute the logs onto the trucks. If the logs don't need to be cut, the total cost is 0.

Example 1:

Input: n = 6, m = 5, k = 5

Output: 5

Explanation:

Cut the log with length 6 into logs with length 1 and 5, at a cost equal to `1 * 5 == 5`. Now the three logs of length 1, 5, and 5 can fit in one truck each.

Example 2:

Input: n = 4, m = 4, k = 6

Output: 0

Explanation:

The two logs can fit in the trucks already, hence we don't need to cut the logs.

Constraints:

* `2 <= k <= 105` * `1 <= n, m <= 2 * k` * The input is generated such that it is always possible to transport the logs.

Code Snippets

C++:

```
class Solution {
public:
long long minCuttingCost(int n, int m, int k) {

}
};
```

Java:

```
class Solution {
public long minCuttingCost(int n, int m, int k) {

}
}
```

Python3:

```
class Solution:
def minCuttingCost(self, n: int, m: int, k: int) -> int:
```