Logo

STUDENT REPORT

DETAILS

Name

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Roll Number

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EXPERIMENT

Title

NUMBER OF COMBINATIONS LEADING TO A PRODUCT

Description

Problem Statement:

You are given an array arr and a product m. Your task is to find the number of possible unique triplets whose product of elements is m.

Input Format:

- The first line contains the integer, n
- The second line contains space seperated integers of the array, arr
- The third line contains the product m.

The input will be read from the STDIN by the candidate

Output Format:

The output consists of a single integer, i.e. the count of unique triplets having product m.

The output will be matched to the candidate's output printed on the STDOUT

Example:

Input:

7

5 3 20 10 1 4 2

60

Output:

3

Explanation:

Product m:60

Possible triplets for product m: (5,4,3),(20,3,1), (10,3,2)

The count of unique triplets is 3.

Source Code:

```
def count_unique_triplets(n, arr, m):
    arr.sort()  # Step 1: Sort the array
    unique_triplets = set()  # Step 2: Use a set for uniqueness

    for i in range(n):
        a = arr[i]
        if a == 0 and m == 0:
            continue  # Skip if we want to handle zero product specially
        if a != 0 and m % a != 0:
            continue  # If m is not divisible by a, skip

        target_product = m // a  # Adjusting target product
        left, right = i + 1, n - 1  # Two-pointer technique

        while left < right:
            b = arr[left]
            c = arr[right]
            current_product = b * c

            if current_product == target_product:
                unique_triplet = tuple(sorted((a, b, c)))
                unique_triplets.add(unique_triplet)  # Step 3: Store in set
                left += 1
                right -= 1
            elif current_product < target_product:
                left += 1
            else:
                right -= 1

    return len(unique_triplets)  # Step 4: Return the count of unique triplets


# Read input
import sys
input = sys.stdin.read
data = input().splitlines()

n = int(data[0].strip())
arr = list(map(int, data[1].strip().split()))
m = int(data[2].strip())

# Get the count of unique triplets
result = count_unique_triplets(n, arr, m)
print(result)
```

RESULT

6 / 6 Test Cases Passed | 100 %