Logo

STUDENT REPORT

DETAILS

Name

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Roll Number

KUB23ECE037

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(arr, m):

    n = len(arr)

    if n < 3:
        return 0  # Not enough elements for a triplet

    arr.sort()  # Sort the array
    unique_triplets = set()  # Set to store unique triplets

    for i in range(n - 2):
        # Avoid duplicates for the first element of the triplet
        if i > 0 and arr[i] == arr[i - 1]:
            continue

        left = i + 1
        right = n - 1

        while left < right:
            product = arr[i] * arr[left] * arr[right]
            if product == m:
                # Add the triplet to the set
                unique_triplets.add((arr[i], arr[left], arr[right]))
                # Move both pointers
                left += 1
                right -= 1

                # Avoid duplicates for the second element of the triplet
                while left < right and arr[left] == arr[left - 1]:
                    left += 1
                # Avoid duplicates for the third element of the triplet
                while left < right and arr[right] == arr[right + 1]:
                    right -= 1

            elif product < m:
                left += 1  # We need a larger product
            else:
                right -= 1  # We need a smaller product

    return len(unique_triplets)

# Input reading
n = int(input().strip())
arr = list(map(int, input().strip().split()))
m = int(input().strip())

# Calculate the result and print
result = count_unique_triplets(arr, m)
print(result)
```

RESULT

6 / 6 Test Cases Passed | 100 %