Kool matrices (Hard)

(The difference between easy and hard versions of the problem is that, in the harder version **K is not fixed**)

You are given an array A with N elements, A_1, A_2, ... , A_N.

Using this array, let us construct a N x N matrix M in the following way: $M_{i,j} = A_i + A_j$.

A Kool matrix is a submatrix of M with dimensions K x K such that $1 \le K \le N$.

The strength of a matrix is defined as the sum of values of all the elements present in that matrix.

You are given a single integer X. You have to find the number of Kool matrices having strength equal to X for all values of K.

Input

First line contains two integers N ($1 \le N \le 10^4$), denoting the length of the array.

Next line will contain N spaced integers denoting the elements of the array ($1 \le A_i \le 1000$).

Next line will contain an integer X ($1 \le X \le 10^{15}$).

Output

A single integer denoting the number of Kool matrices having equal to X.

Example

Input

```
5
1 2 3 4 5
36
```

Output

```
2
```

Explanation

Constructing the matrix M from the array:

```
2 3 4 5 6
3 4 5 6 7
4 5 6 7 8
5 6 7 8 9
6 7 8 9 10
```

There will be 25 Kool matrices with K = 1 (1 element each), 16 Kool matrices with K = 2 (4 elements each), 9 Kool matrices with K = 3 (9 elements each), 4 Kool matrices with K = 4 (16 elements each) and 1 Kool matrix with K = 1 (25 elements).

Out of the total 55 Kool matrices, 1 Kool matrix K1 with K = 2, 1 Kool matrix K2 with K = 3 have strength 36.

K1 = {M_{44}, M_{45}, M_{54}, M_{55}} and K2 = {M_{11}, M_{12}, M_{13}, M_{21}, M_{22}, M_{23}, M_{31}, M_{32}, M_{33}}, have strength equal to X = 36.

Submit solution

All submissions
Best submissions

Points: 80
Time limit: 1.0s
Memory limit: 256M

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Allowed languages
C

Clarifications

Request clarification

No clarifications have been made at this time.

Assignment 4 - 3 days 00:13:59