

Kick Start 2018 - Round G

Product Triplets

Problem

Given N integers A_1, A_2, \dots, A_N , count the number of triplets (x, y, z) (with $1 \leq x < y < z \leq N$) such that at least one of the following is true:

- $A_x = A_y \times A_z$, and/or
- $A_y = A_x \times A_z$, and/or
- $A_z = A_x \times A_y$

Input

The first line of the input gives the number of test cases, T . T test cases follow. Each begins with one line containing an integer N : the number of integers in array A . The second line consists of N integers A_i ; the i -th of these is the value of the i -th integer, as described above.

Output

For each test case, output one line containing `Case #x: y`, where x is the test case number (starting from 1) and y is the number of triplets satisfying the condition given in the problem statement.

Limits

$1 \leq T \leq 30$.

Time limit: 40 seconds per test set.

Memory limit: 1 GB.

$0 \leq A_i \leq 2 \times 10^5$, for all i .

Small dataset (Test set 1 - Visible)

$3 \leq N \leq 200$.

Large dataset (Test set 2 - Hidden)

$3 \leq N \leq 7000$.

Sample

Sample Input

```
4
6
5 2 4 6 3 1
6
2 4 8 16 32 64
3
```

Sample Output

```
Case #1: 1
Case #2: 6
Case #3: 1
Case #4: 0
```

```
1 1 1
3
200000 200000 200000
```

In Sample Case #1, the only triplet satisfying the condition given in the problem statement is (2, 4, 5). The triplet is valid since the second, fourth, and fifth integers are 2, 6, and 3, and $2 \times 3 = 6$.

In Sample Case #2, the six triplets satisfying the condition given in the problem statement are: (1, 2, 3), (1, 3, 4), (1, 4, 5), (1, 5, 6), (2, 3, 5), (2, 4, 6).

In Sample Case #3, make sure you only count the triplet (1, 2, 3) once.

In Sample Case #4, there is no triplet satisfying the condition given in the problem statement since the product of any pair of integers in the array will not be in the array.