People in the Byteland do not love large prime numbers. So they never use the integers having prime factors greater than 30. They love perfect square number. An integer is a perfect square if its square root is an integer. 0,1,4,9 are perfect square numbers. But -4 or 3 is not perfect square.

Now people at Byteland have a sequence of n numbers. They select ${}^{n}C_2$ pairs of numbers from this sequence. A pair is a square pair if the product of its numbers is a perfect square. They are interested to calculate the number of square pairs X among these ${}^{n}C_2$ pairs. Again they select ${}^{n}C_3$triples of numbers from this sequence. A triple is a square triples if the product of its numbers is a perfect square. They are interested to calculate the number of square triples Y among these ${}^{n}C_3$ triples. Help them to calculate X and Y.

Input

First line of the input contains T the number of test case. Then following lines contains T Test cases.

Each case starts with a line containing one integer n the length of the sequence. The next line contains n integers separated by a single space.

Output

For each test case output contain 2 integers X and Y separated by a single space.

Constraints:

- $0 < n \leq 200000$
- Each number in the sequence will have absolute value $< 10^{18}$.
- No number in the sequence will have prime factor greater than 30. But the sequence may contain the number zero as an exception.

Sample Input

```
5
3
2 2 2
3
2 2 4
3
2 -2 2
3
0 2 5
4
10 14 35 29
```

Sample Output

```
3 0
1 1
1 0
2 1
0 1
```