Counting Divisors (square)

Let $\sigma_0(n)$ be the number of positive divisors of n.

For example, $\sigma_0(1) = 1$, $\sigma_0(2) = 2$ and $\sigma_0(6) = 4$.

Let

$$S_2(n) = \sum_{i=1}^{n} \sigma_0(i^2).$$

Your task is to find $S_2(N)$.

Input

First line of Input contains T ($1 \le T \le 10000$), the number of test cases.

Each of the next T lines contains a single number N. ($1 \le N \le 10^{12}$)

Output

For each number N, output a single line containing $S_2(N)$.

Example

Input:

```
5
1
2
3
10
100
```

Output:

```
1
4
7
48
1194
```

Explanation for Input

- $S_2(3) = \sigma_0(1^2) + \sigma_0(2^2) + \sigma_0(3^2) = 1 + 3 + 3 = 7$

Information

There are 6 Input files.

- Input #1: $1 \le N \le 10000$, TL = 1s.

- Input #2: $1 \le T \le 800$, $1 \le N \le 10^8$, TL = 20s.

- Input #3: $1 \le T \le 200$, $1 \le N \le 10^9$, TL = 20s.

- Input #4: $1 \le T \le 40$, $1 \le N \le 10^{10}$, TL = 20s.

- Input #5: $1 \le T \le 10$, $1 \le N \le 10^{11}$, TL = 20s.

- Input #6: $T = 1$, $1 \le N \le 10^{12}$, TL = 20s.

My C++ solution runs in 10.43 sec. (total time)

Source Limit is 6 KB.

Processing math: 100%