Counting Divisors

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 $$S_1(n) = \sum _{i=1}^n \sigma_0(i).$$

Your task is to find $S_1(N)$.

Input

First line contains T ($1 \le T \le 100000$), the number of test cases.

Each of the next T lines contains a single integer N. ($1 \le N < 2^{63}$)

Output

For each number N, output a single line containing $S_1(N)$.

Example

Input

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

Output

```
1
3
5
27
482
```

Explanation for Input

- $S_1(3) = \sigma_0(1) + \sigma_0(2) + \sigma_0(3) = 1 + 2 + 2 = 5$

Information

There are 6 input files.

- Input #1: $1 \le N \le 100000$, TL = 2s.

- Input #2: $1 \le T \le 120,\ 1 \le N \le 10^{15}$, TL = 15s.

- Input #3: $1 \le T \le 60,\ 1 \le N \le 10^{16}$, TL = 15s.

- Input #4: $1 \le T \le 25,\ 1 \le N \le 10^{17}$, TL = 15s.

- Input #5: $1 \le T \le 10,\ 1 \le N \le 10^{18}$, TL = 15s.

- Input #6: $1 \le T \le 5,\ 1 \le N < 2^{63}$, TL = 15s.

My C++ solution runs in about 1.3 seconds for each input #2 - #6.

Note

- Probably, $O(\sqrt{n})$ solutions will not pass.
- The answer can be $\ge 2^{64}$