

Leonardo's Prime Factors



Leonardo loves primes and created q queries where each query takes the form of an integer, n . For each n , he wants you to count the maximum number of unique prime factors of any number in the inclusive range $[1, n]$ and then print this value on a new line.

Note: Recall that a prime number is only divisible by 1 and itself, and 1 is *not* a prime number.

Input Format

The first line contains an integer, q , denoting the number of queries.
Each line i of the q subsequent lines contains a single integer, n .

Constraints

- $1 \leq q \leq 10^5$
- $1 \leq n \leq 10^{18}$

Output Format

For each query, print the maximum number of unique prime factors for any number in the inclusive range $[1, n]$ on a new line.

Sample Input

```
6
1
2
3
500
5000
10000000000
```

Sample Output

```
0
1
1
4
5
10
```

Explanation

1. The maximum number of unique prime factors of any number in the inclusive range $[1, 1]$ is 0 , because 1 is not prime and its only factor is itself.
2. The maximum number of unique prime factors of any number in the inclusive range $[1, 2]$ is 1 . We already know that the number 1 has 0 prime factors, but 2 has 1 prime factor (itself).
3. The maximum number of unique prime factors of any number in the inclusive range $[1, 3]$ is 1 . The number 3 has 1 prime factor (itself), and we already know that the number 2 has 1 prime factor and the number 1 has 0 prime factors.
4. The maximum number of unique prime factors in the inclusive range $[1, 500]$ is 4 . The product of our first four unique primes is $2 \times 3 \times 5 \times 7 = 210$, and there are no additional unique primes we can multiply that number by that results in a value ≤ 500 .

