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

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

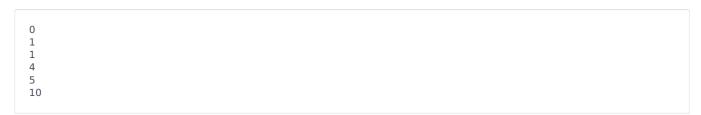
Output Format

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



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 $2\times3\times5\times7=210$, and there are no additional unique primes we can multiply that number by that results in a value ≤500 .