
Problem A. Even Number Theory

Input file: **standard input**
Output file: **standard output**
Time limit: 1 second
Memory limit: 256 megabytes

Let $\mathbb{E} = \{2k | k \in \mathbb{Z}^+\}$, which is the set of all positive even numbers. Define the following concepts:

- E-prime: A positive even number p is an e-prime, if and only if there does not exist two integers a and b , such that $a, b \in \mathbb{E}$ and $p = ab$. For example, 2 and 18 are e-primes, but 16 is not, as $16 = 2 \times 8$.
- E-prime factorization: An e-prime factorization of a positive even number e is the decomposition of e into the product of some smaller e-primes.

More formally, an e-prime factorization of a positive even number e is a **multiset** (a set which allows duplicated elements) \mathbb{P} such that

- For all $p \in \mathbb{P}$, p is an e-prime;
- $\prod_{p \in \mathbb{P}} p = e$.

Please note that, different from the traditional number theory, the e-prime factorization of a positive even number e is NOT unique. For example, we can factorize 36 into 2×18 or 6×6 .

- E-factorial: Let $e!!$ be the e-factorial of a positive even number e , we have

$$e!! = \prod_{k \in \mathbb{E}, k \leq e} k$$

For example, $6!! = 2 \times 4 \times 6 = 48$.

Given a positive even number e , your task is to find an e-prime factorization \mathbb{P} of $e!!$, such that $|\mathbb{P}|$ (the size of \mathbb{P}) is as large as possible. In order to make the task easier, you just need to output the value of $|\mathbb{P}|$.

Input

There are multiple test cases. The first line of the input contains an integer T (about 50), indicating the number of test cases. For each test case:

The first and only line contains a positive even number e ($2 \leq e \leq 10^{1000}$), indicating the given number.

Output

For each test case output one integer in one line, indicating the maximum size of the e-prime factorization of $e!!$.

Example

standard input	standard output
2	1
2	3
4	

Note

For the first sample test case, as $2!! = 2$ is an e-prime, the answer is (obviously) 1.

For the second sample test case, we can factorize $4!! = 8$ into $2 \times 2 \times 2$, which contains 3 e-primes.