

Math, Nero and Seneca

Input file: standard input
Output file: standard output
Time limit: 2 seconds
Memory limit: 1024 megabytes

Ancient Roman philosopher Seneca was the tutor of the future emperor Nero. Nero once asked him how great a number may be. Seneca answered that there are numbers so large that even the wisest citizens of Rome cannot imagine them; for example, numbers that can be created by multiplying usual Roman numbers greater than 1. To avoid the possible ambiguity, Nero decided that only the integers that have a unique representation in this form are counted.

Now a modern artist decided to create an installation dedicated to Nero and Seneca and wants to use some positive integers not exceeding 10^{18} in it. But he wants to be sure that they can be uniquely represented as a product of one or several numbers greater than 1 in Roman numeral representation (more formally, the representations are counted as one representation if they are identical as the multisets, so the representations $4 \cdot 2$ and $2 \cdot 4$ are the same representation).

Any positive integer strictly less than 4000, and only them, has a unique representation in Roman numerals; other rules for writing Roman numerals are well known to all participants, so they will not be provided here for brevity.

Input

The first line of the input contains one integer t ($1 \leq t \leq 2 \cdot 10^5$) — the number of the testcases.

Each of the following t lines describes one testcase and contains one integer n ($2 \leq n \leq 10^{18}$) that needs to be checked.

Output

For each request, print 1 on a separate line if the number can be uniquely represented as a product of Roman numerals greater than 1, and 0 otherwise.

Example

standard input	standard output
4	0
2024	0
2025	0
2026	1
2027	