

Obsession

Ankur sir is really obsessed with dce coders. Every other day he announces to the admins the current number of members and boasts about the continuous increase in the member count. Within a week the admins got bored of his habit and started losing interest in this topic. Ankur sir is very clever. He knows that every body loves to solve puzzles. To maintain their interest he decides to ask a puzzle based on the number of current members. This way he can still bug the admins about the increasing member count without making them feel bored. The puzzle says for the given member count N , tell me how many smaller numbers ($k \geq 2$) exist such that $F(k) = 2^k * k - 1$ is a prime.

Input

First line gives T , the number of test cases

Each of the next T lines give a number N .

Output

Print the output for every test case on a new line

Constraints

$T \leq 1000$

$2 \leq N \leq 10000000$

Example

Input:

1
5

Output:

3