

6740 Death Row

Yudhishtira and his family had given up their kingdom after many years of peaceful rule, and were trekking in the Himalayas. They were going in single file up a narrow mountain road, with Yudhishtira in the lead. As the trek progressed, Yudhishtara noticed that his family members were dropping dead at regular intervals. For unknown reasons, Yama, the Lord of Death, was visiting the line every hour to claim one or more family members. On some of Yama's visits one family member dropped dead, and on other visits more than one person dropped dead at once. In the latter case, Yama, being nutty with numbers, ensured that the number of people remaining in the line after any visit was always a non-trivial factor of the number of people that were in the line before that visit. Although Yudhishtira was detached from death and was unafraid, he wondered what is the smallest number of hours he could travel before his entire family, including himself, succumbed to Yama's noose.

Note: The trivial factors of number N are 1 and N .

Input

The first line contains T , the number of test cases. The description of T test cases follow.

Each test is described by a single integer N , the number of people traveling, in a separate line.

Output

For each test case, output a single line containing the smallest number of hours before Yama claims all N people.

Constraints:

$1 \leq N \leq 1000000000$

Sample Input

```
3
1
2
5
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Sample Output

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1
2
4
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