Problem F: Summer camp

Time Limit: 1 Sec Memory Limit: 128 MB
Submit: 1224 Solved: 225
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Description

This summer holiday, members in SUSTechCPC went to Qinhuangdao to participate in a summer camp there. As they enjoyed a lot, they decided to take a group photo.

There are n member(s) in SUSTechCPC, and they want to stand in $k(k \geq 2)$ rows because it is too crowded to stand in only one row. To make the photo more beautiful, the number of people standing in the i^{th} row should be **exactly one more than** the number of people standing in the $(i-1)^{th}$ row. Since they do not want to stand in too many rows, please tell them the **minimum possible number of rows *k*** or determine that it is impossible to find any valid arrangement.

Input

The first line of the input contains one integer T, indicates the number of testcases.

For each testcase, there is only one line contains one integer $n(1 \leq n \leq 1\,000\,000\,000)$.

Output

Print one single integer, the minimum possible k described above.

If there is no such k, please output 'impossible' (without quotes).

Sample Input

```
3
8
10
24
```

Sample Output

```
impossible
4
3
```

HINT

10 = 1 + 2 + 3 + 4

24 = 7 + 8 + 9

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