Day 3: Reduce to the smallest numbers.

Lex is big fan of the number 1 and he doesn't like any other numbers. Whatever number (d) he comes across, he reduces them to the 1 He uses one of the following steps: - divide the number by one of its proper divisors OR - subtract the number by 1, if the number is greater than 1.

Now Lex wants to calculate how many steps does it take to reach 1. He is tired of doing it manually and needs your help to automate the same.

Input Format

The first line contains an integer value (x) that depicts the number of test cases ($1 \leq x \leq 100$) The following input lines contains each test case with the integer number d ($1 \leq d \leq 1500000$)

Constraints

- ($1 \leq x \leq 100$)
- ($1 \leq d \leq 1500000$)

Output Format

Print the minimum number of moves required to reduce d to 1.

Sample Input 0

```
3
1
9
4
```

Sample Output 0

```
0
3
2
```

Explanation 0

Note For example, the steps that lex followed for the above example is like this. 1 ==> 0 9 -> 3 -> 2 -> 1 ==> 3 4 -> 2 -> 1 ==> 2