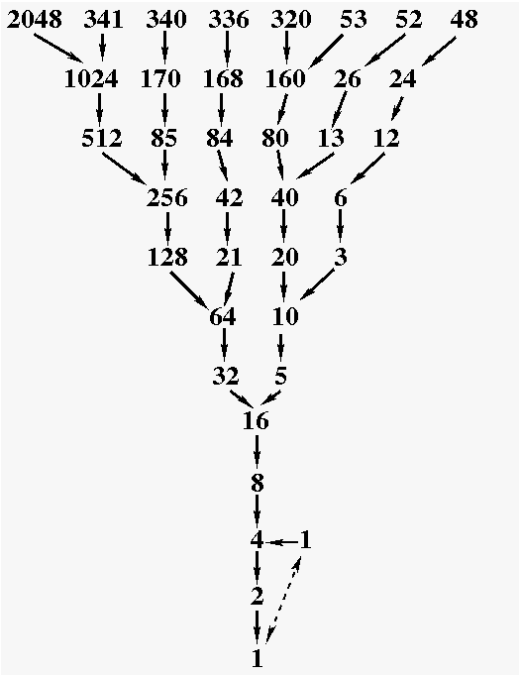
Problem 74: Collatz Conjecture



Difficulty: Easy

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Problem Background

Can you believe that there are some math problems that still remain unsolved today? The Collatz Conjecture is one such problem.

Problem Description

To create a Collatz Sequence, start with any positive integer n. Each term in the sequence is derived from the previous term using the following rules: if the previous term is even, then the next term is one half the previous term. Otherwise, the next term is 3 times the previous term plus 1. The Collatz Conjecture states that no matter what value you pick for n, the series will eventually reach the number 1.

For example, if we start with the number 12, it is even, so the next term is 6. That is also even, so the next term is 3. Three is odd, so the term after that would be 10 and so on. The full sequence is:

12, 6, 3, 10, 5, 16, 8, 4, 2, 1

So starting with 12, the sequence length is 10. Your task is to write a program that will provide the length of a Collatz Sequence starting from a given number.

Sample Input

The first line of your program's input, received from the standard input channel, will contain a positive integer representing the number of test cases. Each test case will include:

- A single positive integer N, which will be greater than or equal to 2, and less than or equal to 1,000,000.

```
5
12
1024
100
4
12345
```

Sample Output

Your program should output the length of each sequence in the following format:

- `<Start Number>:<Sequence Length>`

```
12:10
1024:11
100:26
4:3
12345:51
```