

6 Collatz Conjecture

Machiko and Gair are the first humans to return to the moon in 40 years. The astronauts discover rows of piles of rocks on the far side. Curious, they count the number of rocks in each of the piles in several rows. They discover that any pile with an even number of rocks is followed by a pile with half as many rocks. However, piles with an odd number of rocks are followed by a pile with one more than three times as many (that's $3 \times n + 1$). Each row ends with a pile of 1 rock.

For example, one row starts with a pile of 3 rocks. The next pile has 10 rocks, followed by 5, 16, 8, 4, 2, and finally 1 rock. So, there are 7 piles after the initial pile.

They get tired of counting the piles rocks and ask you to write a computer program that will take the number of rocks in the first pile of a row and then tell how many more piles there are in that row.

The input to your program is one positive integer per line, $1 \leq N \leq 1000000$ representing the number of rocks in the first pile of a row. The input will have no more than 100 lines. The last line will have $N = 0$ and should not be processed.

The output from your program is two numbers per line, separated by a single space. The first number is the number from the input, N . The second number is the count of how many more piles of rocks there would be on the row, not counting the first pile.

Note that some individual piles of rocks may have more than 2^{32} rocks in them.

Note: The \leftarrow symbol in the examples below represents a newline character.

Sample Input

```
17←  
3←  
10←  
12←  
1←  
951652←  
0←
```

Sample Output

```
17 12←  
3 7←  
10 6←  
12 9←  
1 0←  
951652 170←
```