Hailstone Numbers

Choose any positive integer; it will be either even or odd. If it is odd, multiply by 3 and add 1. If it is even, divide by two. This will give you a new number. Repeat the process. Eventually, the process will reduce to 1, and you can stop the process.

Count how many steps it takes to reach 1.

Write a program to perform these calculations and find answers to the following questions:

1. Do all numbers reach 1? In other words, are all numbers hailstone numbers?
2. Can you find any numbers that take a long time to reach 1? (say a thousand steps?)
3. What happens if you change the rules? You may find another interesting property of numbers.