

Odds and Evens

To complete the number chains below follow these steps:

- * if the number is **odd** multiply it by 3 then add 1 ($\times 3 + 1$)
- * if the number is **even** divide it by 2 ($\div 2$)
- * continue this pattern until the answer is 1.
- * record the number of steps needed to reach the answer of 1

Examples:

$$11 \xrightarrow{\times 3 + 1} 34 \xrightarrow{\div 2} 17 \xrightarrow{\times 3 + 1} 52 \xrightarrow{\div 2} 26 \xrightarrow{\div 2} 13 \xrightarrow{\times 3 + 1} 40 \xrightarrow{\div 2} 20 \xrightarrow{\div 2} 10 \xrightarrow{\div 2} 5 \xrightarrow{\times 3 + 1} 16 \xrightarrow{\div 2} 8 \xrightarrow{\div 2} 4 \xrightarrow{\div 2} 2 \xrightarrow{\div 2} 1 \quad \text{14 Steps}$$

$$36 \xrightarrow{\div 2} 18 \xrightarrow{\div 2} 9 \xrightarrow{\times 3 + 1} 28 \xrightarrow{\div 2} 14 \xrightarrow{\div 2} 7 \xrightarrow{\times 3 + 1} 22 \xrightarrow{\div 2} 11 \xrightarrow{\times 3 + 1} 34 \xrightarrow{\div 2} 17 \xrightarrow{\times 3 + 1} 52 \xrightarrow{\div 2} 26 \xrightarrow{\div 2} 13 \xrightarrow{\times 3 + 1} 40 \xrightarrow{\div 2} 20 \xrightarrow{\div 2} 10 \xrightarrow{\div 2} 5 \xrightarrow{\times 3 + 1} 16 \xrightarrow{\div 2} 8 \xrightarrow{\div 2} 4 \xrightarrow{\div 2} 2 \xrightarrow{\div 2} 1 \quad \text{21 Steps}$$

Number	Chain	Steps
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		