

EvenQ[1]

False

EvenQ[2]

True

```
step = {
  n_ /; EvenQ[n] => n/2,
  n_ /; OddQ[n] => 3 n + 1
}
```

```
{n_ /; EvenQ[n] => n/2, n_ /; OddQ[n] => 3 n + 1}
```

11 /. step

34

34 /. step

17

17 /. step

52

11 //. step

ReplaceRepeated: Exiting after 11 scanned 65536 times.

2

```
step1 = {
  n_ /; EvenQ[n] => n/2,
  n_ /; OddQ[n] => 3 n + 1,
  1 -> Bingo
}
```

```
{n_ /; EvenQ[n] => n/2, n_ /; OddQ[n] => 3 n + 1, 1 -> Bingo}
```

11 //. step1

ReplaceRepeated: Exiting after 11 scanned 65536 times.

2

```
step2 = {
  1 -> Bingo,
  n_ /; EvenQ[n] => n/2,
  n_ /; OddQ[n] => 3 n + 1
}
```

```
{1 -> Bingo, n_ /; EvenQ[n] => n/2, n_ /; OddQ[n] => 3 n + 1}
```

```
11 //. step2
```

```
Bingo
```

```
31 //. step2
```

```
Bingo
```

```
11 //. n_Integer => (Print[n]; n /. step2)
```

```
11
```

```
34
```

```
17
```

```
52
```

```
26
```

```
13
```

```
40
```

```
20
```

```
10
```

```
5
```

```
16
```

```
8
```

```
4
```

```
2
```

```
1
```

```
Bingo
```

```
31 //. n_Integer => (Print[n]; n /. step2)
```

```
31
```

```
94
```

```
47
```

```
142
```

```
71
```

```
214
```

```
107
```

```
322
```

```
161
```

```
484
```

```
242
```

```
121
```

```
364
```

182
91
274
137
412
206
103
310
155
466
233
700
350
175
526
263
790
395
1186
593
1780
890
445
1336
668
334
167
502
251
754
377
1132
566
283
850
425

1276
638
319
958
479
1438
719
2158
1079
3238
1619
4858
2429
7288
3644
1822
911
2734
1367
4102
2051
6154
3077
9232
4616
2308
1154
577
1732
866
433
1300
650
325
976
488

244

122

61

184

92

46

23

70

35

106

53

160

80

40

20

10

5

16

8

4

2

1

Bingo