Five steps to 50

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1. For 5 moves to reach 50

Starting numbers	Move 1	Move 2	Move 3	Move 4	Move 5
0	+10	+10	+10	+10	+10
11	-1	+10	+10	+10	+10
22	-1	-1	+10	+10	+10
33	-1	-1	-1	+10	+10
44	-1	-1	-1	-1	+10
55	-1	-1	-1	-1	-1

2. For 4 moves to reach 50

Starting numbers	Move 1	Move 2	Move 3	Move 4
54	-1	-1	-1	-1
43	-1	-1	-1	+10
32	-1	-1	+10	+10
21	-1	+10	+10	+10
10	+10	+10	+10	+10

3. For 6 moves to reach 50

Starting numbers	Move 1	Move 2	Move 3	Move 4	Move 5	Move 6
56	-1	-1	-1	-1	-1	-1
45	-1	-1	-1	-1	-1	+10
34	-1	-1	-1	-1	+10	+10
23	-1	-1	-1	+10	+10	+10
12	-1	-1	+10	+10	+10	+10
1	-1	+10	+10	+10	+10	+10

4. For 7 moves to reach 50
   Predicted start numbers with 7 moves are:
   2, 13, 24, 35, 46 and 57.

Method used:

1. To find all the possibilities of starting number to reach 50 from a given number of moves:
    a. We consider a number for movement of steps. We then add that number to 50 and then mark that as the first possibility/starting point.
    b. We subtract the first start number by 11 and then mark that point as our next possibility.
    c. We keep repeating the process until case 1 (or) case 2, whichever comes first, to find all the other possibilities.
        i. Case 1: The next number is negative
        ii. Case 2: The units place of a number is 0.

Using this method, we can predict all the possibilities.

2. To find the easiest way to reach 50
    a. We keep subtracting the starting number by 1 (-1) until we reach a number which must be exactly divisible by 10. This particular number has to be less than 51.
    b. Then we keep adding 10 (+10) to the number, which we obtained in step (a) until we reach 50.

Observation:

The difference between two consecutive starting numbers which reach 50 in a given number of moves is always 11.

Example:

a. 56 and 45 are the two starting numbers/possibilities (6 moves) (Difference between these two numbers is 11)
b. 54 and 43 are the two starting numbers/possibilities (4 moves) (Difference between these two numbers is 11)

Reason:

Difference is 11 because the smaller number always needs an additional +10 move to reach 50.

i.e, +10 more than the previous starting number.

As +10 is a move, one -1 must be replaced with +10. Hence the difference is 11. This process goes on and on based on different starting numbers.

Example:

4 moves

Starting numbers	Move 1	Move 2	Move 3	Move 4
54	-1	-1	-1	-1
43	-1	-1	-1	(-1)+10
32	-1	-1	(-1) +10	+10
21	-1	(-1) +10	+10	+10
10	(-1) +10	+10	+10	+10