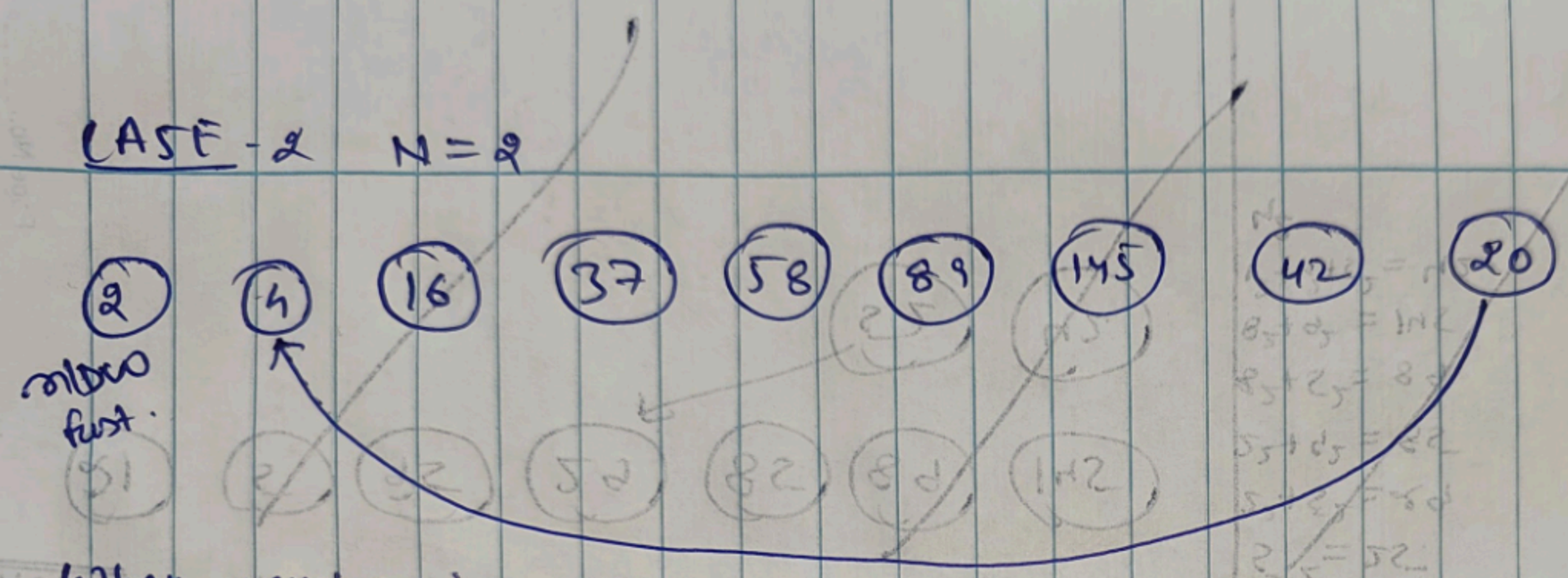
CASE - 2 N = 2



When number is not happy it forms a cycle.

slow	fast
2	2
4	16
16	58
37	145
58	20
89	16
145	58
42	145
20	20

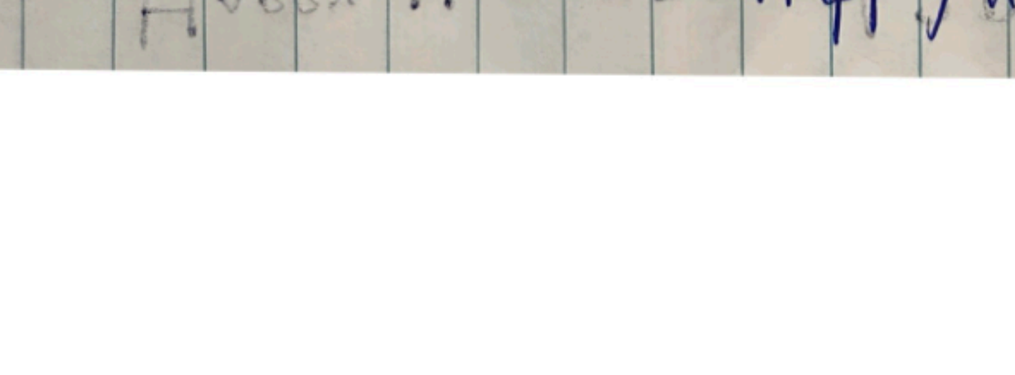
→ slow and fast becomes equal.
But the slow is not at 1. so this is not happy number. This is sad number.

$2^2 = 4$
$4^2 = 16$
$1^2 + 6^2 = 37$
$3^2 + 7^2 = 58$
$5^2 + 8^2 = 89$
$8^2 + 9^2 = 145$
$1^2 + 4^2 + 5^2 = 42$
$4^2 + 2^2 = 20$
$2^2 + 0^2 = 4$

HAPPY NUMBER (202)

☆ This can be solved using two pointer but we solve this using the slow & fast pointer approach of linked list.

CASE - 1 N = 19



$1^2 + 9^2 = 82$
$8^2 + 2^2 = 68$
$6^2 + 8^2 = 100$
$1^2 + 0^2 + 0^2 = 1$
$1^2 = 1$

Slow	Fast
19	19
82	68
68	1
100	1
1	1

Both becomes equal and slow is = 1 so it is