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Hi! My name is Bill Weights, founder of Super Scooper Ice Cream. I am offering you a gift certificate for our signature "Super Bowl" (a \$4.95 value) if you forward this letter to 10 people.

When you have finished sending this letter to 10 people, a screen will come up. It will be your Super Bowl gift certificate. Print that screen out and bring it to your local Super Scooper Ice Cream store. The server will bring you the most wonderful ice cream creation in the world—a Super Bowl with three yummy ice cream flavors and three toppings!

This is a sales promotion to get our name out to young people around the country. We believe this project can be a success, but only with your help. Thank you for your support.

Sincerely,

Bill Weights
Founder of Super Scooper Ice Cream

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My THOUGHTS

On day 1, Bill Weights starts by sending the email out to his 8 closest friends. Each forward it to 10 people so that on day 2, it is received by 80 people. The chain continues unbroken.

How many people will receive the email on day 7?

How many people will receive the email on day n ?

(Explicit Function) ← Get from process column of table

Include in your answer with as many representations as possible.

RECURSIVE
 GRAPH

If Bill gives away a Super Bowl that costs \$4.95 to every person that receives the email during the first week, how much will he have spent?

Recursive Function

Recursive Function: $f(1) = 8$
 $f(x) = f(x-1) \cdot 10$

Recursive Idea: Next = Previous $\cdot 10$

Change to Function Notation

Sequence 8, 80, 800, 8000 ...

Term# Day	Sequence People	explicit Process	Recursive Function
1	$f(1) = 8$) $\times 10$	$f(1) = 8$ ← starting point
2	$f(2) = 80$		$f(2) = f(1) \cdot 10$ <small>8</small>
3	$f(3) = 800$		$f(3) = f(2) \cdot 10$ <small>80</small>
4	$f(4) = 8000$		$f(4) = f(3) \cdot 10$ <small>800</small>
5			
100		$8 \cdot 10^{99}$	$f(100) = f(99) \cdot 10$
X			$f(x) = f(x-1) \cdot 10$

2, 20, 200, 2000.

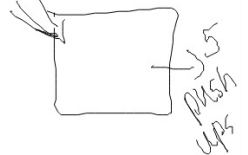
Recursive function

Recursive idea:

Next = previous + 2

3, 5, 7, 9, ...

↓
-2



Day	x	Push-ups	process	Recursive function
1		$f(1) = 3$	3	$f(1) = 3$
2		$f(2) = 5$	$3 + 2$	$f(2) = f(1) + 2 = 5$
3		$f(3) = 7$		$f(3) = f(2) + 2 = 7$
4		$f(4) = 9$		$f(4) = f(3) + 2 = 9$
x				

$$f(x) = f(x-1) + 2$$

$$f(1) = 3$$

500, 902, 904, ...

Recursive function

Use function idea

$$\text{NEXT} = \text{PREVIOUS} \cdot 10$$

But using function notation

8, 80, 800, 8000, ...

Term #	sequence	people	process
Day 1	$f(1) = 8$		
2	$f(2) = 80$		
3	$f(3) = 800$		
4	$f(4) = 8000$		
100		$8 \cdot 10^{99}$	
x		$8 \cdot 10^{x-1}$	

Recursive function

$$f(1) = 8 \leftarrow \text{starting \#}$$

$$f(2) = f(1) \cdot 10$$

$$f(3) = f(2) \cdot 10$$

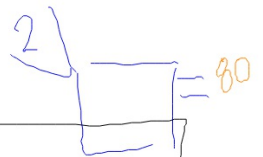
$$f(4) = f(3) \cdot 10$$

$$f(100) = f(99) \cdot 10$$

$$f(x) = f(x-1) \cdot 10$$

Recursive:
 $f(1) = 8$
 $f(x) = f(x-1) \cdot 10$

2, 20, 200, 2000, ...



Recursive function

Recursive idea: $\text{Next} = \text{Previous} + 2$

3, 5, 7, 9, ...

terms X	sequence Y	Process	Recursive function
1	$f(1) = 3$:	$f(1) = 3$
2	$f(2) = 5$:	$f(2) = f(1) + 2 = 5$
3	$f(3) = 7$:	$f(3) = f(2) + 2 = 7$
4	$f(4) = 9$:	$f(4) = f(3) + 2 = 9$
X			$f(x) = f(x-1) + 2$ $f(1) = 3$

201, 203, 205