Warmup

All make up work due today - make sure your name is on it and turn in to the bin at the front

Find the pattern and see if you can make the equation

0 1 2 3 4
1 3, 5, 7, 9...

+2 → common difference

$2x+1$

What does f(n) represent?

current term

Function Notation

0 1 2 3 4
9 14, 19, 24, 29...

+5 +5 → common difference

$5x+9$

What does f(1) stand for?

1st term

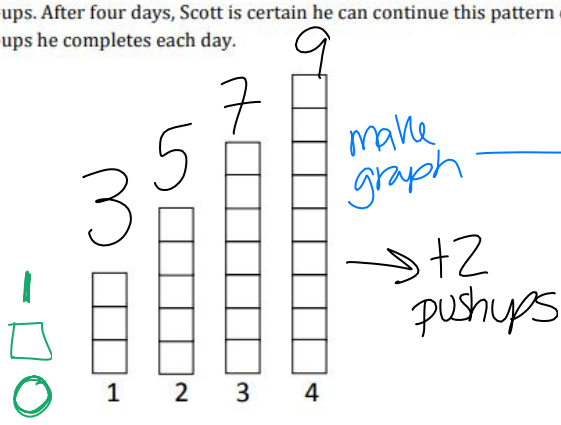
f(14)

14th term

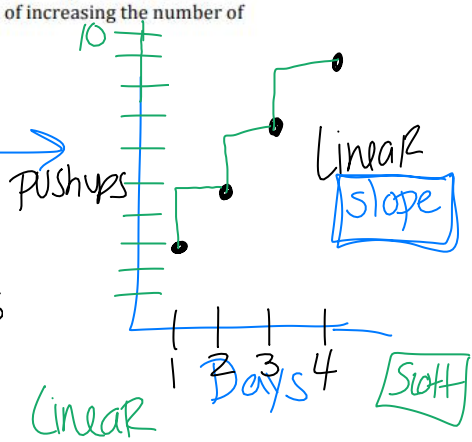
Scott's Workout

A Solidify Understanding Task

Scott has decided to add push-ups to his daily exercise routine. He is keeping track of the number of push-ups he completes each day in the bar graph below, with day one showing he completed three push-ups. After four days, Scott is certain he can continue this pattern of increasing the number of push-ups he completes each day.



make graph →



Linear
slope

Linear
same slope → common difference

1. How many push-ups will Scott do on day 10?

21 pushups

2. How many push-ups will Scott do on day n?

increase $2n+1$ 0 term

*0 term Shortcut

3. Model the number of push-ups Scott will complete on any given day. Include both explicit and recursive equations.

Recursive
$a_n = a_{n-1} + d$
never change
*a_1 = 1st term
$a_1 = 3$
$a_n = a_{n-1} + 2$

Explicit
$a_n = a_1 + d(n-1)$
$a_n = 3 + 2(n-1) = 3 + 2n - 2$
$2n+1$

4. Aly is also including push-ups in her workout and says she does more push-ups than Scott because she does fifteen push-ups every day. Is she correct? Explain.

Aly

Day	Pushup
1	15
2	15
3	15
4	15
5	15
6	15
7	15
8	15
9	15
10	15

Aly does more Scott until Day 7. At day 7 tied. After Day 7, Scott does more.

Day	Pushup
1	3
2	5
3	7
4	9
5	11
6	13
7	15
8	17
9	19
10	21

Explicit & Recursive

13, 10, 7, 4, 1 . . .

-3 = d

$a_n = 10 - 3(n-1)$

$10 - 3n + 3$

$13 - 3n$ Explicit

Recursive

$a_1 = 10$

$a_n = a_{n-1} - 3$

$13 - 3n$

Explicit

15, 21, 27, . . .

+6

Explicit

$A_n = 15 + 6(n-1)$

$15 + 6n - 6$

$A_n = 9 + 6n$

Recursive

$a_1 = 15$

$a_n = a_{n-1} + 6$

-14, -18, -22, . . .

-4 -4 = d

Explicit

$A_n = -14 - 4(n-1)$

$-14 - 4n + 4$

$-10 - 4n$

Recursive

$a_1 = -14$

$a_n = a_{n-1} - 4$

-3, 5, 13 . . .