

Warmup: Find the pattern

1) 0.25, 0.75, 1.25, 1.75...

2) -5, -9, -13, -17...

3) Find the pattern and see if you can make an equation

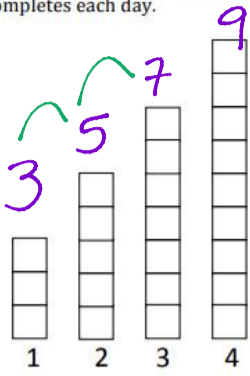
-10, 10, 30, 50...

Scott's Workout



A Solidify Understanding Task

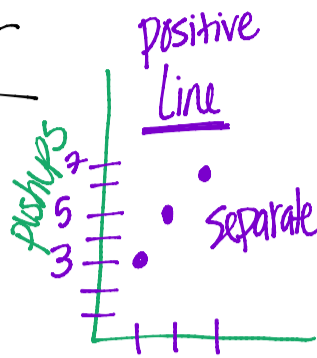
Scott has decided to add push-ups to his daily exercise routine. He is keeping track of the number of push-ups he completes each day in the bar graph below, with day one showing he completed three push-ups. After four days, Scott is certain he can continue this pattern of increasing the number of push-ups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



$d=2$

+2 Common difference

x	y
1	3
2	5
3	7
4	9
5	11



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

21 → Count or make equations

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

$2x+1$

$1+2n$

$a_n = 2n + 1$
 $y = 2x + 1$

only do certain # pushups each day

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

Arithmetic → Adding/subtracting every time

$A_1 = 1^{st}$ term

$d =$ common difference

Explicit: $A_1 = 3$, $d = 2$

$A_n = 3 + 2(n-1)$
 $A_n = 3 + 2n - 2$

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

Recursive: $A_1 = 3$
 $A_n = A_{n-1} + 2$

$a_n = 1 + 2n$

To get to term 50 → need day 49

get to Day 800 → need to know day 799 (previous term)

Aly

15 day

x	y
1	15
2	15
3	15
4	15
...	...
Forever	15

Scott

1	3
2	5
3	7
4	9
5	11
6	13
7	15
8	17

+2 every day

*Aly is doing more pushups until day 7. Day 7 they equal each other. Day 8 and more Scott wins.

Equation

$$2n + 1 = 365$$

$$\frac{2n}{2} + \frac{1}{2} = \frac{365}{2}$$

$$n + 0.5 = 182.5$$

$$n = 182$$

$$2n = 364$$

$$\frac{2n}{2} = \frac{364}{2}$$

$$n = 182$$

Days

Find the explicit and recursive formulas for each

-3, 5, 13...

10, 5, 0, -5...

-7, -4, -1...