

All make up work due today - name on it and turn it into the bin up front

Warmup

1) Find the pattern and see if you can make the equation

$$\begin{array}{cccccc} 0 & 1 & 2 & 3 & 4 & \\ 3 & 6 & 9 & 12 & 15 & \dots \end{array}$$

✓ +3 common difference
$$\boxed{3x+3}$$

2) What does $f(n)$ represent?

Function Notation

$$\begin{array}{cccccc} 0 & 1 & 2 & 3 & 4 & \\ 45 & 40 & 35 & 30 & 25 & \dots \end{array}$$

-5 common difference
$$\textcircled{-5x+45}$$

$$45-5x$$

What does $f(1)$ mean?

1st term

What is the recursive equation for arithmetic?

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

What is the explicit equation for arithmetic?

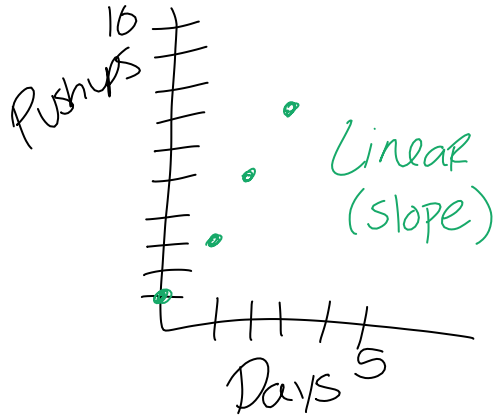
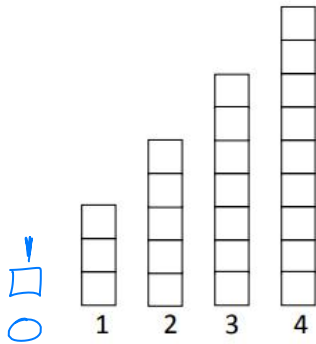
$$a_n = a_1 + d(n-1)$$

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.



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

21

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

ADD 2 every day $\rightarrow 2n + 1$ 0 term

* Can use 0 term for

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

Recursive

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

$$a_n = a_{n-1} + 2 \quad a_1 = 3$$

Explicit

$$a_n = a_1 + d(n-1)$$

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

Shortcut

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.

$2n+1$

Aly	Days	Pushup
	1	15
	2	15
	3	15
	4	15
	5	15
	6	15
	7	15
	8	15
	9	15

Scott

Aly does more pushups until day 7 when they equal each other.

Scott passes after Day 7 & does more

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

Explicit + Recursive

① 10, 18, 26, ...

② -12, -15, -18, ...

③ $\frac{1}{2}, 1, \frac{3}{2}, 2, \dots$

④ -7, 10, 27, ...

⑤ 45, 33, 21, 9, ...

⑥ 8, 2, -4, -10, ...

1) E: $a_n = 10 + 8(n-1)$
 $10 + 8n - 8$ ($2 + 8n$)

R: $a_n = a_{n-1} + 8$ $a_1 = 10$

2) Exp: $A_n = -12 - 3n + 3$

Rec: $-9 - 3n$

$a_1 = -12$
 $a_n = a_{n-1} - 3$

3) Exp: $\frac{1}{2}n$

Rec: $a_n = a_{n-1} + \frac{1}{2}$
 $a_1 = \frac{1}{2}$

4) Exp: $17n - 24$

Rec: $a_n = a_{n-1} + 17$
 $a_1 = -7$

5) Exp: $-12n + 57$

Rec: $A_n = A_{n-1} - 12$
 $A_1 = 45$

6) Exp: $-6n + 14$

Rec: $A_n = A_{n-1} - 6$
 $A_1 = 8$