Create the explicit and recursive formulas for each

$\frac{-4}{0}$ 1) -7, -10, -13...

$-10 - -7 = -3$

$-3 = d$

Recursive

$A_1 = -7$

$A_n = A_{n-1} - 3$

Explicit

$A_n = -7 - 3(n-1)$

$= -7 - 3n + 3$

$A_n = -4 - 3n$

$\frac{6}{0}$ 2) 8.5, 11, 13.5, 16...

$11 - 8.5 = 2.5 = d$

Rec

$A_1 = 8.5$

$A_n = A_{n-1} + 2.5$

Explicit

$A_n = 8.5 + 2.5(n-1)$

$8.5 + 2.5n - 2.5$

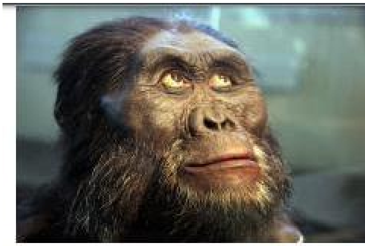
$A_n = 6 + 2.5n$

OR $2.5n + 6$

Module 1.4 **Arithmetic Sequences Notes** **Name:**

What Does It Mean?

A Solidify Understanding Task



Each of the tables below represents an arithmetic sequence. Find the missing terms in the sequence, showing your method.

$\frac{y_2 - y_1}{x_2 - x_1} = \underline{\text{slope}}$

1.

x	1	2	3
y	5	8	11

+3 +3

$\frac{11-5}{3-1} = \frac{6}{2} = +3$

2.

x	1	2	3	4	5
y	18	11	4	−3	-10

−7 −7 −7 −7

$\frac{-10-18}{5-1} = \frac{-28}{4} = -7$

3.

−3 −3 −3 −3 −3 −3

x	1	2	3	4	5	6	7
y	12	9	6	3	0	−3	-6

$\frac{-6-12}{7-1} = \frac{-18}{6} = -3$

4. Describe your method for finding the missing terms. Will the method always work? How do you know?

Guess & Check ✓

played w/ calc #5

Nothing

Here are a few more arithmetic sequences with missing terms. Complete each table, either using the method you developed previously or by finding a new method.

5.

x	1	2	3	4
y	50	62	74	86

$$\frac{86-50}{4-1} = \frac{36}{3} = 12$$

6.

x	1	2	3	4	5	6
y	40	34	28	22	16	10

$$\frac{10-40}{6-1} = \frac{-30}{5} = -6$$

7.

x	1	2	3	4	5	6	7	8
y	-23	-19	-15	-11	-7	-3	1	5

+4 +4 +4 +4 +4 +4 +4

$$\frac{5--23}{8-1} = \frac{28}{7} = 4$$

8. The missing terms in an arithmetic sequence are called "arithmetic means". For example, in the problem above, you might say, "Find the 6 arithmetic means between -23 and 5". Describe a method that will work to find arithmetic means and explain why this method works.

$$\frac{\text{last term} - \text{1st term}}{\text{term\#} - \text{term \#}}$$

Create explicit & Recursive

$a_{14} = 90$ $d = 4$ $A_1 = \underline{38}$

$90 = A_1 + 4(14-1)$

$90 = A_1 + \cancel{52}$
$-52 \quad -\cancel{52}$

Recursive

$A_1 = 38$

$A_n = A_{n-1} + 4$

Exp

$A_n = 38 + 4(n-1)$
$38 + 4n - 4 \rightarrow \boxed{A_n = 4n + 34}$

$A_7 = 90$ $d = \underline{13.75}$

$A_{15} = 200$

$$\frac{200 - 90}{15 - 7} = 13.75$$

$A_1 = \underline{7.5}$
$d = 13.75$

$90 = A_1 + 13.75(7-1)$

$90 = A_1 + \cancel{82.5}$
$-82.5 \quad -\cancel{82.5}$

Recursive

$A_1 = 7.5 \quad A_n = A_{n-1} + 13.75$

Exp

$A_n = 7.5 + 13.75(n-1)$
$= 7.5 + 13.75n - 13.75$

$\boxed{A_n = -6.25 + 13.75n}$

Dejuan → \$40,000

After 1 yr → \$48,000

$d = 8000$

Exp

$A_n = 40000 + 8000n$

Recur

$A_1 = 48000$

$A_n = A_{n-1} + 8000$

X	Y
0	40000
1	48000
2	56000
3	64000