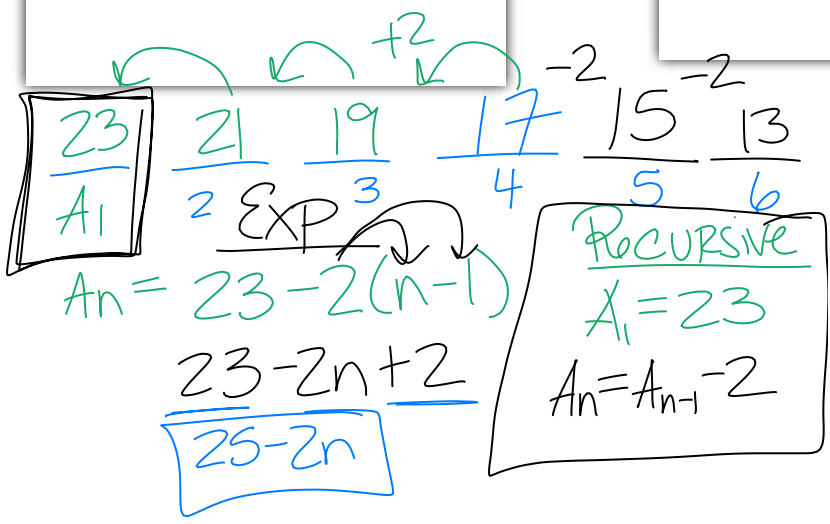
Warmup

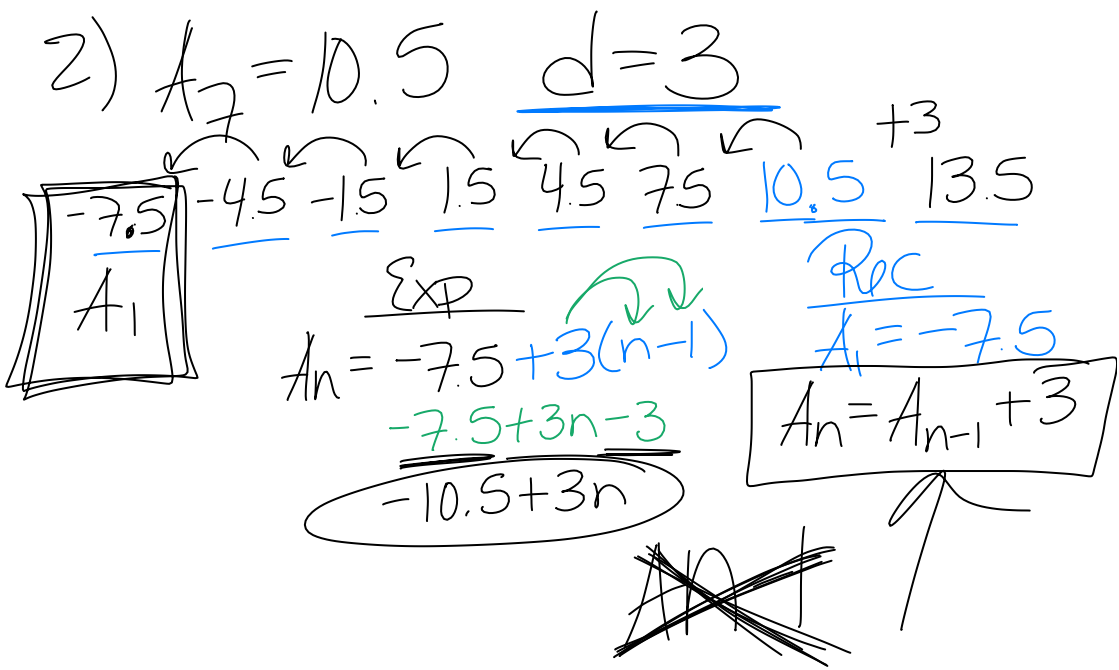
Homework due today! Make sure your name is on it and keep it out on your desk!

Find the recursive and explicit formulas

1) $a_4 = 17 \quad d = -2$

2) $a_7 = 10.5 \quad d = 3$





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.

1.

x	1	2	3
y	5	8	11

+3 +3

$\frac{11-5}{3-1} = 3$

+3

2.

-7 -7

x	1	2	3	4	5
y	18	11	4	-3	-10

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

3.

x	1	2	3	4	5	6	7
y	12	9	6	3	0	-3	-6

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

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

Jumez

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.

+12 +12 +12

x	1	2	3	4
y	50	62	74	86

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

6.

-6 -6 -6 -6 -6

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

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

7.

+4 +4

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

$$\frac{5-(-23)}{8-1} = 4$$

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.

Last term minus 1st term. Divide that number by last term minus 1st term
(8) (1)

$$\frac{\text{Last term} - \text{1st term}}{\text{term} - \text{term}}$$

Practice problems (for the white sheet you picked up)

1) Given the equation An = 5n - 5, find the following terms

A_8 A_{14} A_{45}

2) Given the 14th term and the common difference, find the 40th term.

$A_{14} = 200$ $d = -10$

3) Given the 5th and 9th term, create the explicit and recursive

$A_5 = 19$ $A_9 = 35$

4) Given the recursive defintion, create the explicit definition

$A_1 = 8$ $A_n = A_{n-1} - 4$

5) Given the explicit definition, create the recursive definition

$A_n = -6 + 3n$

Have out practice quiz with any questions you have

Grab formula sheet (green), calculator and PENCIL - NO PEN

QUIZ today!

GSE Algebra 1 **Unit 1 Practice Quiz #1** **Name:**

Madison just landed a great job as an architect where she will make $80,000 a year. The company she will work for guarantees a $3,000 pay **increase** each year so its employees' salaries keep up with inflation. At the end of the **1st** year Madison will have made $83,000 dollars.

1. What is the **recursive** function that will represent this situation?

2. What is the **explicit** function that represents Madison's salary?

3. What is the recursive and explicit function that fits with the sequence show in the table below?

x	y
1	44
2	36
3	28
4	20
44	?

Explicit:

Recursive:

4. The table below represents an **arithmetic** sequence. Find the missing values.

x	1	2	3	4	5
f(x)	10			31	

What is the **common difference**: _____

Create the **recursive** and **explicit** formula for the sequence above.

a. $a_n = a_{n-1} - 7 \quad a_1 = 10; \quad a_n = 7n - 3$

b. $a_n = a_{n-1} + 7 \quad a_1 = 17; \quad a_n = 5n - 3$

c. $a_n = a_{n-1} - 7 \quad a_1 = 17; \quad a_n = 7n + 3$

d. $a_n = a_{n-1} + 7 \quad a_1 = 10; \quad a_n = 7n + 3$

5. How can you tell a sequence of numbers is an arithmetic sequence?

6. You're going green! You want to make your front garden look great ☺
   You fill the front row with 14 flowers, the second row with 16 flowers, the third row 18 flowers and so on.
   a. Create the **explicit** function that shows how many flowers you can plant on any row of your garden.

   b. Create the **recursive** function that represents how many flowers you can plant on each row.
      a. $a_1 = 14, \quad a_n = a_{n+1} + 5$
      b. $a_1 = 14, \quad a_n = a_{n-1} + 2$
      c. $a_1 = 12, \quad a_n = a_{n-1} + 2$
      d. $a_n = 2n + 12$

   c. How many flowers would you plant on the 20th row?

   d. At what row are you planting 32 flowers in?
      a. 15th row
      b. 6th row
      c. 10th row
      d. 11th row

7. Given the 10th term and the common difference, find the 25th term.
   $a_{10} = 210 \qquad d = -5$

8. Given the 3rd term and the 7th term, create the **explicit** and **recursive** function.
   $a_3 = 8 \qquad a_7 = 28$

9. Given the recursive definition, write the explicit definition.
   $a_1 = 8 \qquad a_n = a_{n-1} - 2$
   a. $a_n = -2n + 8$
   b. $a_n = 2n + 10$
   c. $a_n = 2n + 8$
   d. $a_n = -2n + 10$