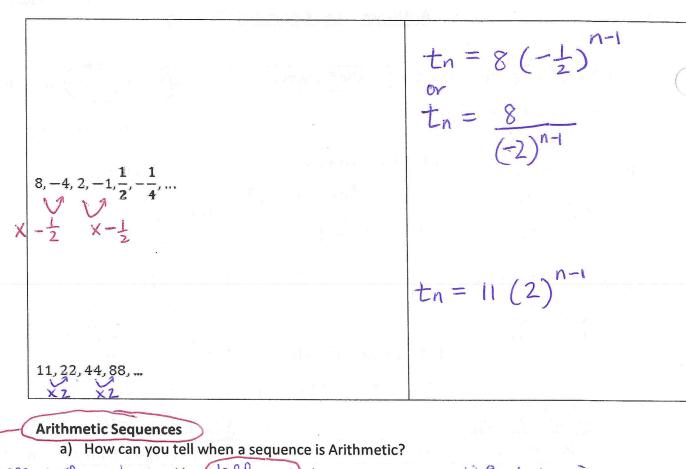
M'ay 29 MCR3U Park X Unit 7 test will be Friday June 5 Arithmetic and Geometric Sequences

	The following sequences are Arithmetic Sequences :	Find an explicit formula for t_n (or $f(n)$):
	$\pm n = \alpha + (n-1)d$	$t_n = (+ 3 c_{n-1})$
n=	12345 Recursive Formula	tn=1+3n-3
	$t_1, 4, 7, 10, 13,$ $t_1 = t_{n-1} + 3, t_1$ $t_2 = t_1$	tn = 3n - 2
n :	= 2 3 4 5 6	tn= -5+1(n-1)
11 -	-5, -4, -3, -2, -1, 0, 1,	tn = -5 + n - 1
	+1 +1 +1 4 Recursive Formula	$(0. \pm n = n - 6)$
	$t_n = t_{n-1} - 10, t_1 = 15$	tn = 15 + [-10 (n-1)]
	15,5,-5,-15,-25,	tn = -10n + 25
	The following sequences are Geometric Sequences:	Find an explicit formula t_n (or $f(n)$):
	1	
	& Recursive Formula	$t_n = a(r)^{n-1}$
		$t_n = 1 (2)^{n-1}$
n	1234567 $t_n = t_{n-1} \times 2, t_i = 1$:. $t_n = (2)^{n-1}$
	X2 X2 X2 X2	· Ln - (2)
		n-1
	* RF: tn = tn-1 X2, ti=7 300	$t_n = 7(2)^{n-1}$
/		
	1 2 2 4 5	
4	7, 14, 28, 56, 112,	Be promote a did not be the
	XZ XZ XZ	
	sanar zako barra tako barra ba	100 n-1
	*RF: tn = tn-1 X3, ti=-6,	$t_n = -6(3)^{n-1}$
4	1 2 3 4	
	-0, -10, -34, -102,	
	x3 x3	



a) How can you tell when a sequence is Arithmetic?

is a sequence where the difference between consecutive terms is a constant.

add or minus

b) If a is the first term and d is <u>Common difference</u>, what is the general formula tn?

tn = a + (n-1) d (Explicit Form) difference between consecutive terms first term common difference

term number (= input)

def Geometric Sequences \rightarrow formula $^{\circ}$ $t_n = a(r)^{n-1}$ def a) How can you tell when a sequence is Geometric?

is a sequence in which the ratio of consecutive terms is a constant.

b) If a is the first term and? is <u>Common ratio</u>, what is the general formula tn? ratio between consecutive terms

Example 1 Is the following sequence arithmetic or geometric? -13, -19, -25, ...

a) Determine an explicit formula for the general term of the sequence.

$$t_n = -13 - 6(n-i) = -6n - 7$$

b) Determine a recursive formula for the general term of the sequence.

c) What is the value of the 15th term of the sequence?

$$t_{15} = -13 - 6(15 - 1) = -13 - (6 \cdot 14) = -13 - 84$$

$$= -97$$

Determine the 25th term of the sequence $-17, -10, -3, 4, \dots$

Arithmetic sequence: tn = a+d(n-1)+7 +7

$$\pm n = -17 + 7(n-i)$$

$$t_n = -17 + 7n - 7$$

> tn = 7(25) - 24 : t25 = 151

$$= 175 - 24$$

° ∩= 42

Example 3 Find the number of terms in the sequence 3, 15, 27, ..., 495 n=?Arithemetic Seq: tn = 3+12(n-1)

$$495 = 3 + 12n - 12$$

$$495 = 3 + 12n - 12$$

$$495+9 = 120$$

 $\frac{504}{100}=\eta$ In an arithmetic sequence, $t_{12}=52$ and $t_{22}=102$, determine the first Example 4

terms.

Example 5 In a sequence, the common difference is 5, and $t_{1z} = 62$. Is this sequence arithmetic or geometric? Find the first term of the sequence, and then write an explicit formula for the general term of the sequence. Example 6 Is the following sequence arithmetic or geometric? Calculate the value of the 12th term.

72,48,32,...

- **Example 7** A sequence has a first term of 5 , and a common ratio of $^{-2}$.
 - a) Is this sequence arithmetic or geometric? Write the first 4 terms of the sequence.

b) If $t_n = 20 \ 480$, find n.

Example 8 Determine the number of terms in the sequence

 $\frac{\frac{1}{2,1}}{\frac{4,1}{8}}, \dots, \frac{1}{1024}$