

# CLO: Students will DESCRIBE and DEFINE patterns of change as ARITHMETIC or GEOMETRIC or GEOMETRIC SHIFT from TABLES, GRAPHS and SITUATIONS

## Warm Up:

- $U_0 = -8$

- $U_n = U_{n-1} + 3$

- For  $n \geq 0$

- Graph each sequence on GRAPH PAPER

$$U_1 = -8 + 3 = -5$$
$$U_2 = -5 + 3 = -2$$

$$U_0 = 2$$

$$U_n = U_{n-1} * 1.5$$

$U_1 = -8$

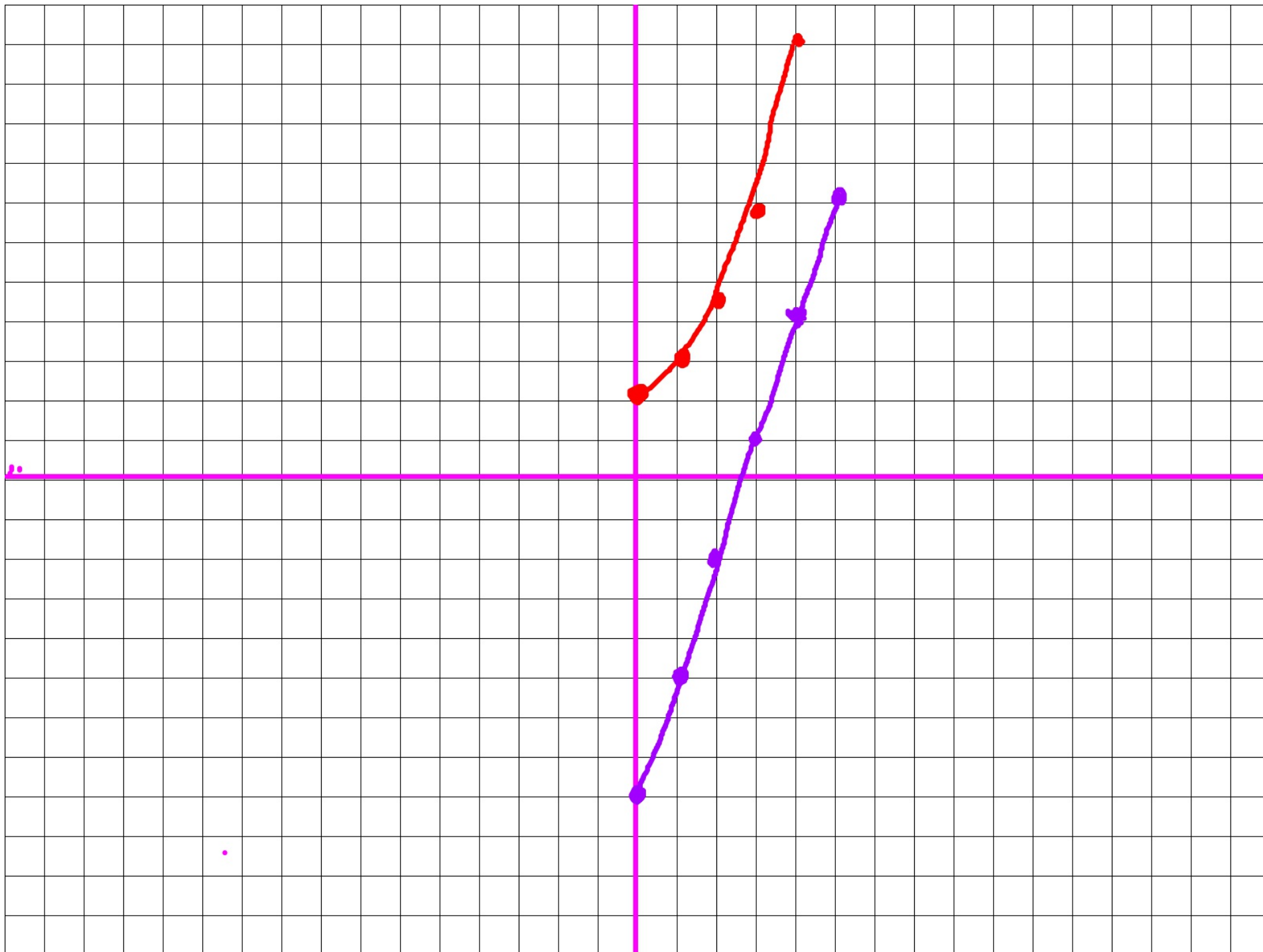
$n$	$U_n$	$n$	$u_n$
0	-8	1	-8
1	-5		
2	-2		

COMPARE and CONTRAST the graphs.

How are they SIMILAR?

How are they DIFFERENT?

Investigation 'Match Up'



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## Warm - Up

- Using the given sequences of numbers, DESCRIBE the PATTERN OF CHANGE for each as ARITHMETIC or GEOMETRIC, find the COMMON DIFFERENCE or COMMON RATIO and write a RECURSIVE FORMULA for each:

1. 2, -5, -12, -19...  $U_n = U_{n-1} - 7$   $U_0 = 2$
2. -3, 12, -48, 192....  $U_n = -4 U_{n-1}$   $U_0 = -3$
3. 64, 16, 4, 1, .25...  $U_n = U_{n-1} / 4$   $U_0 = 64$   
 $= \frac{1}{4} U_{n-1}$   
 $.25 U_{n-1}$

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Table Task: Group Recursion Problem

- Working in groups of 4, on one piece of graph paper with all of your names, using your situation, complete the following:
  - Define your situation as GEOMETRIC GROWTH or DECAY, explain how you know
  - Write a RECURSIVE RULE for your situation
  - Find the first 8 values for your recursion
  - Graph those 8 points on graph paper
  - Does your situation have a LIMIT? Explain!

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**CLASSWORK**

**PAGES 55: # 1, 2, 3, 5**

$$\begin{array}{lll} \text{min} & n=0 & u_n=0 \\ \text{max} & n=10 & u_n=18 \end{array}$$

