

Math 1

* Quiz Friday
↳ this will be an
online test so bring
laptops. *

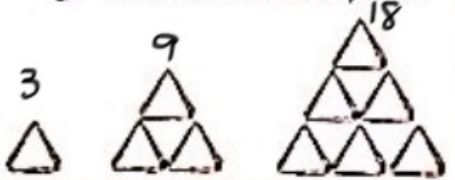
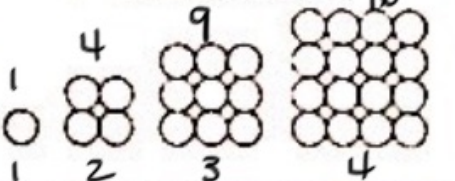
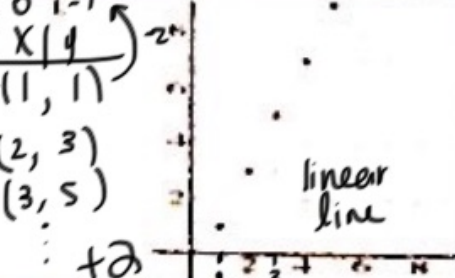
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1 Determine whether the given information represents an arithmetic sequence, a geometric sequence, or neither. Then write recursive and explicit functions for each arithmetic: $+/-$ geometric: \times/\div

	Arithmetic, geometric, or neither?	Recursive function (Subset notation)	Explicit function										
xa a. 1, 2, 4, 8, 16, ... b. 3, 4, 7, 12, 19, ...	geometric neither	$a_n = 2 \cdot a_{n-1}, a_1 = 2$ N/A	$y = 1(a^x)$ N/A										
c. <table border="1" style="display: inline-table; vertical-align: middle;"> <thead> <tr> <th>Time (in days)</th> <th># Dots</th> </tr> </thead> <tbody> <tr><td>1</td><td>3</td></tr> <tr><td>2</td><td>7</td></tr> <tr><td>3</td><td>11</td></tr> <tr><td>4</td><td>15</td></tr> </tbody> </table>	Time (in days)	# Dots	1	3	2	7	3	11	4	15	arithmetic	$a_n = a_{n-1} + 4$ $a_1 = 3$	$y = mx + b$ $y = 4x - 1$
Time (in days)	# Dots												
1	3												
2	7												
3	11												
4	15												
d. <table border="1" style="display: inline-table; vertical-align: middle;"> <thead> <tr> <th>Time (in days)</th> <th># Dots</th> </tr> </thead> <tbody> <tr><td>1</td><td>2</td></tr> <tr><td>2</td><td>6</td></tr> <tr><td>3</td><td>18</td></tr> <tr><td>4</td><td>54</td></tr> </tbody> </table>	Time (in days)	# Dots	1	2	2	6	3	18	4	54	geometric	$a_n = 3 \cdot a_{n-1}$ $a_1 = 2$	$y = a(b^x)$ $y = \frac{2}{3}(3^x)$
Time (in days)	# Dots												
1	2												
2	6												
3	18												
4	54												
e. Vanessa has \$60 to spend on rides at the state fair. Each ride costs \$4.	arithmetic	$a_n = a_{n-1} - 4$ $a_1 = 56$	$y = mx + b$ $y = -4x + 60$										



<p>f. Cami bought a car for \$6,000. The car depreciates by 8% each year. decrease → expon.</p> <p>x .92</p>	<p>geometric</p>	<p>$a_n = .92 \cdot a_{n-1}$ $a_1 = 5520$</p>	<p>$y = a(b^x)$ or $y = a(1-r)^x$ $y = 6000(1-.08)^x$ $y = 6000(.92)^x$</p>
<p>g. Number of toothpicks</p> 	<p>neither</p>	<p>N/A</p>	<p>N/A</p>
<p>h. Number of circles</p> 	<p>neither</p>	<p>N/A</p>	<p>$y = n^2$</p>
	<p>arithmetic</p>	<p>$a_n = a_{n-1} + 2$ $a_1 = 1$</p>	<p>$y = 2x + 1$</p>

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Check Your Understanding

a. Consider a sequence generated by the explicit rule $f(x) = 6x - 4$.

- i. Is the sequence arithmetic, geometric, or neither?
- ii. What are the first five terms of the sequence?
- iii. Write a recursive rule, in subset notation to represent the sequence.

b. Given the sequence of dots to the right,



- i. Explain why the sequence is a function
- ii. What are the first 5 terms of the sequence?
- iii. Match the sequence to one of the explicit rules and explain how you determined the match

$f(n) = 3n$
 $f(n) = 3n - 2$
 $f(n) = n^3$
 $f(n) = 3^{n-1}$

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Try to find as many as you can, but you must find at least 4 things to add for each sequence.

2 The recursive function for the sequence is $a_n = a_{n-1} + 4$, $a_1 = -12$.

What do you know?

Arithmetic

Common diff: +4

x	y
1	-12
2	-8
3	-4

$y = 4x - 16$

3 The first 5 terms of the sequence are 0, -6, -12, -18, -24...

What do you know?

Common diff: -6

Arithmetic

$$a_n = a_{n-1} - 6, a_1 = 0$$

$$y = -6x + 6$$

4 The explicit function rule for the sequence is $f(x) = -10(3)^x$.

What do you know?

Common Ratio: 3
geometric

x	y
0	-10
1	-30
2	-90

$a_n = 3 \cdot a_{n-1}, a_1 = -30$

5 The first 4 terms of the sequence are 2, 3, 4.5, 6.75...

What do you know?

6 The sequence is arithmetic and $f(3) = 10$ and $f(7) = 26$.

What do you know?

x	y
3	10
4	14
5	18
6	22
7	26

+4
16

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