

Algebra 1
11.1 Sequence Review

Name: _____
Date: _____ Period: _____

What you need to know & be able to do	Things to remember	Examples									
<p>13. Arithmetic & Geometric Sequences</p> <p>Arith: + / -</p> <p>Geo: × / ÷</p>	<p>Arithmetic: Explicit: $a_n = a_1 + (n-1)d$</p> <p>Recursive: $a_1 =$ $a_n = a_{n-1} + d$</p> <p>Geometric: Explicit: $a_n = a_1 \cdot r^{n-1}$</p> <p>Recursive: $a_1 =$ $a_n = r(a_{n-1})$</p> <p>You must always know your first term and the constant ratio/common difference to write an explicit formula!</p>	<p>a. Create a simplified explicit and recursive formula for the following: -4, -9, -14, -19...</p> <p>$d: -5$ $a_1: -4$ $a_n = -4 + -5(n-1)$ $a_n = a_{n-1} - 5$</p>	<p>b. Create an explicit and recursive formula for the following: 81, 27, 9, 3, ...</p> <p>$r: \frac{1}{3}$ $a_1: 81$ $a_n = 81(\frac{1}{3})^{(n-1)}$ $a_n = (\frac{1}{3})(a_{n-1})$</p>								
		<p>c. Determine the 9th term in the sequence: 5, 15, 45, ...</p> <p>$\frac{15}{5} = 3$ $\frac{45}{15} = 3$ $r = 3$ $a_1 = 5$ $a_n = a_1 \cdot r^{(n-1)}$ $a_9 = 5 \cdot 3^{(9-1)} = 32805$</p>	<p>d. Given the sequence -3, 0, 3, 6... find the 32nd term.</p>								
<p>$y = ab^x$ start</p>		<p>e. Determine the first five terms of the sequence: $a_n = -2 \cdot 3^{n-1}$</p> <table border="1"> <tr> <td>x</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>y</td> <td>-2</td> <td>-6</td> <td>-18</td> </tr> </table>	x	1	2	3	y	-2	-6	-18	<p>f. Determine the first five terms of the sequence: $a_1 = 6$ $a_n = \frac{1}{2}(a_{n-1})$</p>
x	1	2	3								
y	-2	-6	-18								
		<p>g. Determine the first five terms of the sequence: $a_1 = 4$ $a_n = a_{n-1} - 3$</p>	<p>h. Determine the first five terms of the sequence: $a_n = -5n + 2$</p> <p>$a_n = a_1 + d(n-1)$</p>								

		<p>i. Write the explicit formula given the following arithmetic sequence: $a_4 = 6$ and $a_5 = 2$</p>	<p>j. Write the explicit formula given the following geometric sequence: $a_3 = -18$ and $a_4 = -54$</p>								
<p>14. Sequence Applications</p>	<p>$a_n = a_1 r^{n-1}$</p>	<p>a. The table shows a car's value for 3 years after it is purchased. a. Does this table form an arithmetic or geometric sequence? Explain how you know.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="background-color: #0056b3; color: white;">Year</th> <th style="background-color: #0056b3; color: white;">Value (\$)</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">18,000</td> </tr> <tr> <td style="text-align: center;">2</td> <td style="text-align: center;">15,300</td> </tr> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">13,005</td> </tr> </tbody> </table> <p style="margin-left: 20px;">$\frac{15,300}{18,000} = .85 = r$</p> <p>b. Create an explicit formula to represent the table. $a_n = 18000 (.85)^{n-1}$</p> <p>c. How much is the car worth after 8 years? $a_8 = 18000 (.85)^{8-1}$ $a_8 = \\$5770.39$</p>		Year	Value (\$)	1	18,000	2	15,300	3	13,005
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