NC Math 1B Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Unit 6 Lesson 3 Homework: Recursive Arithmetic Sequence**

**I. Write a recursive formula for the following sequences.**

1. $7, 10, 13, 16, …$

2. $99, 88, 77, 66, …$

3. $-47, -43, -39, -35, …$

**II. Using the recursive formula, find the first four terms for the arithmetic sequence.**

1. $A\_{n}=A\_{n-1}-7$ $A\_{1}=13$

2. $A\_{n}=A\_{n-1}+3.5$ $A\_{1}=2.7$

3. $A\_{n}=A\_{n-1}+18$ $A\_{1}=-19$

**III. Write a recursive formula using recursive notation to model each scenario.**

1. A theater has 60 seats in the first row, 68 seats in the second row, 76 seats in the third row, and so on.

2. Suppose on January 1st you deposit $1.00 in an empty piggy bank. On January 8th you deposit $1.50, on January 15th you deposit $2.00 and each week thereafter you deposit $0.50 more than the previous week.

3. To prove that objects of different weights fall at the same rate, Galileo dropped two objects with different weights from the Leaning Tower of Pisa in Italy. The objects hit the ground at the same time. When the objects were dropped, they fell about 16 feet the 1st second, 48 feet the 2nd second, and 80 feet the 3rd second, regardless of their weight.

**IV. Determine whether each sequence is arithmetic, geometric, or neither.**

1. $5, 13, 29, 61, …$ 2. $324, 108, 36, 12, 4, …$ 3. $-6, 1, 8, 15, …$

TURN OVER!

**V. Geometric Sequence Review**

1.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **n** | 1 | 2 | 3 | 4 | 5 | … |  |
| ***a*n** | 12 | 18 | 27 |  |  | … | 461.3203125 |

 Common Ratio: \_\_\_\_\_\_\_\_\_\_

 Recursive Formula: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Explicit Formula: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. Given the sequence below, find the common ratio r, write the explicit formula.

**2.7, 8.64, 27.648, 88.4736, 283.11552, …**

 Common Ratio: \_\_\_\_\_\_\_\_\_\_ Explicit Formula: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. Short Answer questions:

1. What is the difference between a geometric sequence and an arithmetic sequence?
2. What do you call the number you multiply by in a geometric sequence?
3. What is the symbol we use to represent your answer to part b?
4. What is the explicit equation we use to find any term in a geometric sequence?

4. Given the sequence below, use the explicit formula to find the indicated term.

$$-5, 10, -20, 40, -80, 160$$

 $a\_{11}=\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_$ $a\_{17}=\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_$ $a\_{21}=\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_$

5. Using recursive notation, write a recursive formula for the following scenario: A scientist starts with 27 bacteria in a dish. The number of bacteria doubles each day.