

Name: _____

Date: _____

13.6 NOTES: Sequences (Bring it all Together)

Algebra I

I. Comparing Functions to Sequences

- a. Griffin has \$500 to invest. Bank A offers a simple interest rate of 5% per year. Bank B offers an interest rate of 4.5% compounded annually. Write **functions** to model each situation and fill in the table below.

| Years | $A(t) =$ | $B(t) =$ |
|-------|----------|----------|
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| | | |

- a. Write **explicit formulas** to represent both sequences.

- b. Write **recursive formulas** to represent both sequences.

II. Arithmetic, Geometric, or Neither / Explicit or Recursive

List the first 4 numbers of the sequence, and identify it as being *arithmetic*, *geometric*, or *neither*. Then, classify the formula as *explicit* or *recursive*.

a. $a_n = \frac{1}{2}a_{n-1}$ where $a_1 = 4$ arithmetic or geometric or neither
_____ explicit or recursive

b. $a_n = 3 + (n - 1)2$ arithmetic or geometric or neither
_____ explicit or recursive

c. $f(n + 1) = 2f(n) + 4$ where $a_1 = 3$ arithmetic or geometric or neither
_____ explicit or recursive

d. $f(n) = -2n + (n - 1)5$ arithmetic or geometric or neither
_____ explicit or recursive

e. $a_n = 3(2)^{n-1}$ arithmetic or geometric or neither
_____ explicit or recursive

III. Recursive vs. Explicit

Identify the following sequences as arithmetic or geometric, and then write a recursive and explicit formula to represent it.

- a. $-2, 2, 6, 10, \dots$ arithmetic or geometric

Recursive Formula: _____

Explicit Formula: _____

- b. $2, 4, 8, 16, \dots$ arithmetic or geometric

Recursive Formula: _____

Explicit Formula: _____

- c. $\frac{1}{2}, 1, \frac{3}{2}, 2, \frac{5}{2}, \dots$ arithmetic or geometric

Recursive Formula: _____

Explicit Formula: _____

- d. $4, -1, -6, -11, \dots$ arithmetic or geometric

Recursive Formula: _____

Explicit Formula: _____

IV. Application

Devon kept track of her times as she ran around the track.

| | | | | | |
|---------------------------|------|------|------|------|------|
| Laps | 1 | 2 | 3 | 4 | 5 |
| Time (min:sec) | 1:15 | 2:30 | 3:45 | 5:00 | 6:15 |

- a. As the laps increase in regular intervals of _____, the time increases by_____.
- b. Is this situation arithmetic or geometric?
- c. Write 3 formulas to describe Devon's lap times.

Recursive Formula: _____

Explicit Formula: _____

Function: _____

- d. If Devon keeps up this pace, how long will it take her to run 25 laps?