Algebra I Name: _____
Unit 6 Sequences Review Date: _____ Period: _____

Explicit Formulas	**Recursive Formulas**
• Arithmetic Formula: ○ $\boldsymbol{a_n = a_1 + d(n-1)}$ • Geometric Formula: ○ $\boldsymbol{a_n = a_1(r)^{n-1}}$	• Arithmetic Formula: ○ $\boldsymbol{a_n = a_{n-1} + d}$ • Geometric Formula: ○ $\boldsymbol{a_n = (r)a_{n-1}}$

1) Given the sequence {-1, 3, 7, 11, …}, find a_{25}.

A) 95 B) 91 C) 103 D) 99

2) What is the common ratio of the geometric sequence below?

-5, -10, -20, -40, …

A) -2 B) 2 C) $-\frac{1}{2}$ D) $\frac{1}{2}$

3) The first five terms in a pattern are shown below:

-0.5, -0.25, 0, 0.25, 0.5, …

If this pattern continues, which expression can be used to find the n^{th} term?

A) -0.25*n* – 0.25 B) 0.75*n* – 1.25 C) -0.5*n* + 0.25 D) 0.25*n* – 0.75

4) Which function could be used to represent the sequence 8, 20, 50, 125, 312.5, …, given that $a_1 = 8$?

Find a_8: _____

A) $a_n = a_1 + a_{n-1}$ B) $a_n = 1.5 \cdot (a_{n-1})$ C) $a_n = (a_1) \cdot (a_{n-1})$ D) $a_n = 2.5 \cdot (a_{n-1})$

5) Which of the following represents a rule to this sequence:

-27, -12, 3, 18, …

A) -27 + 15n B) 15 – 27(n – 1) C) 15 – 27n D) -27 + 15(n – 1)

6) In a sequence, the first term is 4 and the common difference is 3. The fifth term of the sequence is …

A) -11 B) -8 C) 16 D) 19

7) Which sequence is arithmetic?

A) 6, 4, 2, 0, -4
B) -190, -90, 10, 110, 210
C) 18, 6, 2, $\frac{2}{3}, \frac{2}{9}$
D) -9, -2, 5, 12, 18

8) What is the next term in the sequence below?

2, 10, 50, 250, …

9) Identify the type of sequence (arithmetic or geometric) and the common difference or ratio.

$$a_n = 4 \cdot \left(\frac{5}{2}\right)^{n-1}$$

Type of sequence: _____ common difference/ratio: _____

10) Write the ***recursive*** formula for the sequence below.

5, -15, 45, -135

11) Write the ***recursive*** formula for the sequence below.

2, -1, -4, -7, …

12) What are the fourth and fifth terms of the following sequence?

$-\frac{1}{2}, -\frac{1}{4}, 0,$ _____, _____

13) Find a_8 if $a_n = 7 + (n-1) \cdot 3$

14) Which sequence has a common difference of 2?

A) {n + 2, n + 4, n + 8, …}
B) {n, 2n, 4n, …}
C) {n + 3, n + 5, n +7, …}
D) {n, 4n, 8n, …}

15) What are the first 4 terms of the sequence: _____, _____, _____, _____

$$a_n = 3 \cdot \left(\frac{5}{2}\right)^{n-1}$$

16) The table shows the price of shoes over several months.

Month	Price
1	$80.00
2	$72.00
3	$64.80

A) Write an ***explicit*** rule for the table:

B) Find the price of shoes after 8 months:

17) Tabitha began working at a coffee shop. She made $9.15 her first hour working. Every six months she makes $0.40 as a raise. Write a formula for this situation ***explicitly***.

18) Tabitha began working at a coffee shop. She made $9.15 her first hour working. Every six months she makes $0.40 as a raise. How much does she make per hour after 3 years?