

Name: _____

Date: _____

13.6 HOMEWORK: Sequences (Bring it all Together)

Algebra I

I. Comparing Functions to Sequences

- a. Two equipment rental companies have different penalty policies for returning a piece of equipment late:

Company 1: On day 1, the penalty is \$4. On day 2, the penalty is \$6. On day 3, the penalty is \$8 and so on, increasing by \$2 each day.

Company 2: On day 1, the penalty is \$0.04. On day 2, the penalty is \$0.08. On day 3, the penalty is \$0.16 and so on, doubling each day.

Fill in the table below to determine which company you should choose if you think the job might take you an extra 2 weeks.

Company 1	
Day (n)	Penalty (a_n)
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	

Company 2	
Day (n)	Penalty (b_n)
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	

- b. Write the explicit and recursive formulas that model each company's late policy next to the appropriate table.
- c. Why does it not make sense to view these formulas in their function form?

II. Arithmetic or Geometric / Explicit or Recursive

List the first 5 numbers of the sequence, and identify it as being *arithmetic* or *geometric*. Then, classify the formula as *explicit* or *recursive*.

a. $a_n = 4 + (n - 1)3$ arithmetic or geometric

_____ explicit or recursive

b. $f(n + 1) = \frac{1}{4}f(n)$ where $a_1 = 320$ arithmetic or geometric

_____ 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. $\frac{1}{2}, \frac{3}{4}, 1, \frac{5}{4}, \dots$ arithmetic or geometric

Recursive Formula: _____

Explicit Formula: _____

b. $-1, 3, -9, 27, \dots$ arithmetic or geometric

Recursive Formula: _____

Explicit Formula: _____