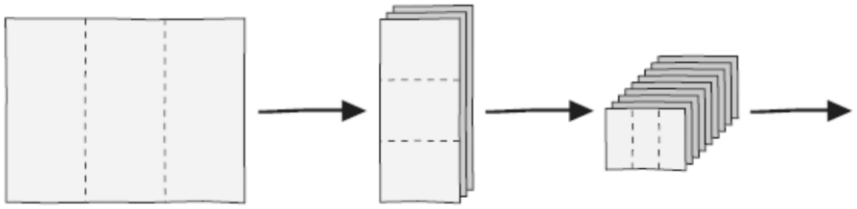
Name: _____ Date: _____ Period: _____ Score: _____/23

Unit 3 Growing, Growing, Growing Assignment #1

Believe in yourself. You can do it!

1. A sheet of paper was cut into thirds. The three pieces of paper were stacked and instantly cut into thirds. All the pieces were stacked and instantly cut into thirds again as illustrated in the diagram below.



a. Complete this table to show the number of ballots after each of the first five cuts.

Number of Cuts	Number of Ballots
1	3
2	
3	
4	
5	

b. Suppose you continued this process. How many ballots would you have after 10 cuts?

c. Write a recursive equation for the number of ballots after *n* cuts.

d. Write an explicit equation for the number of ballots after *n* cuts.

e. How many cuts would you need to have at least 1 million ballots?

For #2 – 5, write a recursive and explicit equation for each sequence.

2) 3, 6, 9, 12, …

a. Recursive:

b. Explicit:

3) 90, 30, 10, $\frac{10}{3}$, …

a. Recursive:

b. Explicit:

4) 2, 4.5, 7, 9.5, …

a. Recursive:

b. Explicit:

5) $1, \frac{1}{2}, \frac{1}{4}, \frac{1}{8}, \ldots$

a. Recursive:

b. Explicit:

6. Given the following equations list the first 5 terms for each function. Notice some of the equations are explicit and some are recursive.

a. $f(1) = -2$
$f(x) = f(x-1) * 4$

b. $f(x) = 7 + 5(x-1)$

c. $f(x) = 4(3)^{x-1}$

d. $f(1) = -2$
$f(x) = f(x-1) - 4$

e. $f(x) = 3x - 4$

f. $f(1) = -24$
$f(x) = f(x-1) * \frac{1}{2}$

Solve the following equations.

7. $\frac{x+4}{3} - 2 = 2x + 1$

8. $\frac{x}{5} = 3x + 1$

9. $-2(3x-4) = -7x + 3$

10. $\frac{2}{3}x - 1 = \frac{3}{4}x + 1$