Name: _____ Date: _____ Period: _____ Score: _____/28

Sec 1H Unit 3 Day 1 – Exponential Growth Assignment

1. Many single-celled organisms reproduce by dividing into two identical cells. Suppose an amoeba splits into two amoebas every half hour (this means **four amoebas every hour**).

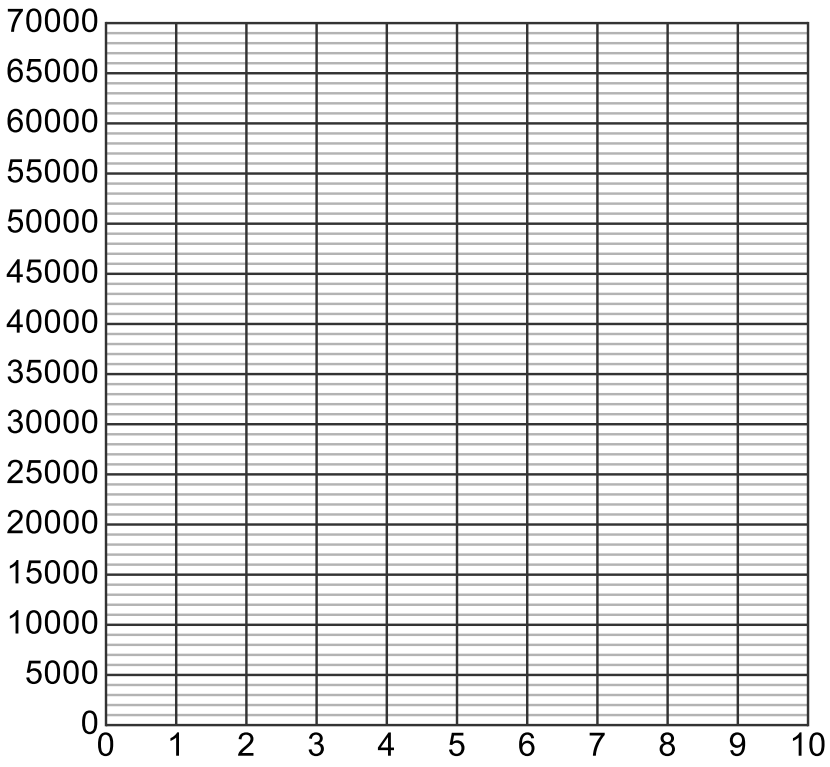
a. An experiment starts with one amoeba (uh MEE buh). Make a table showing the number of amoebas at the end of each ***hour*** over an 8-hour period.

Hours								
Amoebas								

b. Write a recursive equation and an explicit equation for the number of amoebas *a* after *t* hours.
Recursive: Explicit:

c. After how many hours will the number of amoebas reach one million?

d. Make a graph of the (*time, amoebas*) data from part (a).



You have Brains in your Head.
You have Feet in your Shoes.
You can Steer yourself any
Direction you Choose. Dr. Seuss

For #2 – 5, find the pattern for each sequence. If the sequence is arithmetic, circle "difference" and give the common difference. If the sequence is geometric, circle "growth factor" and find the growth factor.

2. 100, 80, 64, . . .

difference/growth factor =_____

3. 82, 76, 70, 64, . . .

difference/growth factor =_____

4. –49, –35, –21, –7, . . .

difference/growth factor =_____

5. $\frac{4}{9}$, 4, 36, ...

difference/growth factor =_____

6a. Write an explicit equation for the *n*th term of the sequence -2,10,-50,…

6b. What is f(11)?

7a. Write an explicit equation for the nth term of the sequence 21, 13, 5, –3, . . .

7b. What is f(-1)?

8a. Write a recursive equation for the *n*th term of the sequence –5, 12, 29, 46, . . .

8b. What is f(11)?

9a. Write a recursive equation for the nth term of the sequence 512, 128, 32, . . .

9b. What is f(-1)?

For Exercises 10–15, write the number in exponential form using 2, 3, 4, or 5 as the base.

10. 125

11. 64

12. 81

13. 3,125

14. 1,024

15. 4,096