Unit 3 Day 3 -Arithmetic vs Geometric Assignment   Name: _____

1. Many single-celled organisms reproduce by dividing into two identical cells. Suppose an amoeba   (uh MEE buh) splits into two amoebas every half hour (this means <u>four amoebas every hour</u>).

a. An experiment starts with one amoeba. 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.
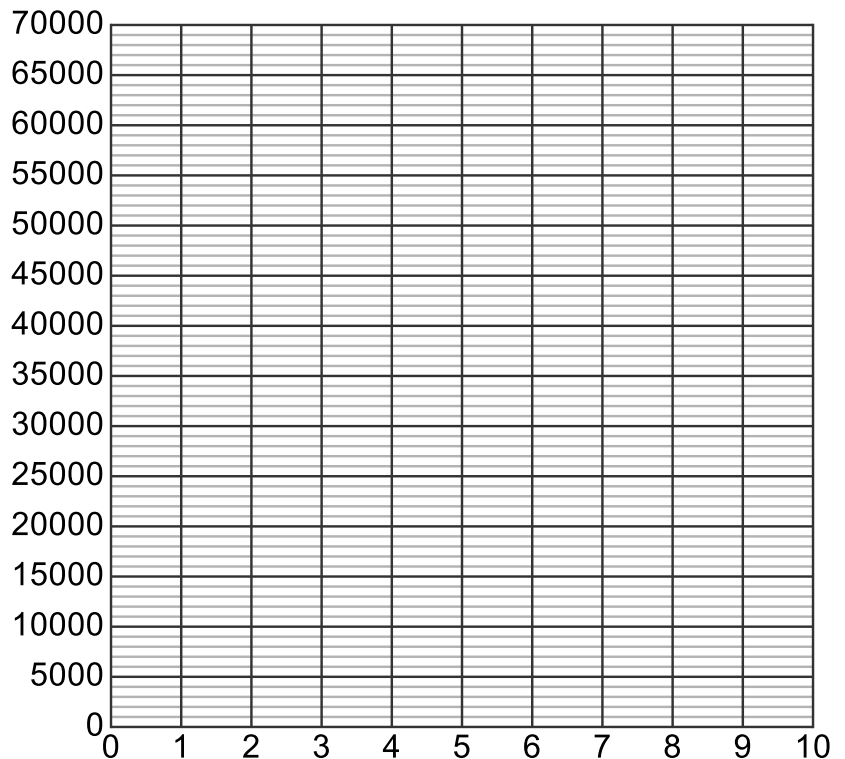Recursive: Explicit:

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

d. Is this situation represented by a linear or exponential model?

e. 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*

Determine if the following sequences are arithmetic or geometric and give the common difference or common ratio.

2. 100, 80, 64, . . .

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

Common ratio/difference=_____Common ratio/difference=_____

4. −49, −35, −21, −7, . . .

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

Common ratio/difference=_____Common ratio/difference=_____

6a. Write an explicit equation for the nth 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 nth 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