

NAME:

Block:

Exponential Growth Review

1. A simple one-celled organism divides into two identical cells every 30 minutes. 6 of these organisms are present in a sample now.

a. Complete the table below.

Number of 30-Minute Time Periods	0	1	2	3	4	5
Number of Organisms Present						

b. Create a rule that can be used to calculate the number of animals present after any number of 30 – minute periods.

$y =$ _____

c. How many organisms will be present in the sample after 7 hours? Explain and show your work!

2. The following table gives the number of Internet hosts (in thousands) for the years 1995 through 2005.

Years since 1995 (x)	0	1	2	3	4	5	6	7	8	9	10
Internet Hosts (in thousands)(y)	4,852	9,472	16,146	29,670	43,230	72,398	109,574	147,344	171,638	233,101	317,646

a. Use your calculator to produce a scatterplot, an equation for a linear model, and an equation for an exponential model. **Round to four decimal places.**

Linear model: _____ Exponential model: _____

b. Which model, linear or exponential, do you think would be a better predictor of the number of Internet Hosts at the end of the 2005 and beyond? Explain why you think so.

Linear _____ Exponential _____

Explanation:

3. Suppose your school wants to hire you for 6 days of painting in the summer. You are to choose between two payment plans. With Plan 1, you would be paid \$25 per day.

a. Complete the table below for this plan.

a.

Day Number	0	1	2	3	4	5	6
Amount Earned that day (in dollars)	0	25	50				

b. How much would your **total pay** for plan 1 be for 6 days? Explain or show your work.

With Plan 2, you would be paid \$10 for accepting the job. Then your pay would be \$20 for the first day, \$40 for the second day, and continuing to double, for the 6 days of work.

c. Complete the following table for Plan 2.

Day Number	0	1	2	3	4	5	6
Amount Earned that day (in dollars)	10	20	40				

d. How much would your **total pay** for plan 2 be for 6 days? Explain or show your work.

e. Based on your answers to Parts b and d, with which plan would you be paid more money for these 6 days of work?

f. Write a *recursive* rule that shows how to use your earnings on one day to calculate your earnings on the next day under Plan 2.

e. Write a rule beginning “ $y = \dots$ ” that can be used to calculate each day’s earnings under Plan 2.

$$y = \underline{\hspace{2cm}}$$

4. Duncan's grandparents put some money into a college savings account when he was born. They intend to let the interest accumulate in the account until he needs to use the money to help pay for college. The rule $y = 3,000(1.06^x)$ gives the account balance after x years.
- How much money did they put into the account when Duncan was born? Explain your reasoning.
 - What is the interest rate for this account?
 - Write a *recursive* rule that shows how to use the account balance in one year to calculate the balance one year later.
 - How much money will be in the account after 18 years?
 - Describe how the account balance changes over the 18 years that the account is open.