Exponential Growth Practice Test Name_____

1. A simple **one**-celled organism **divides into four** identical cells **every 30 minutes**.

a. **Write a rule** that includes exponents and begins **"*y* = …"** that can be used to calculate the number of animals present after any number of 30-minute periods.

b. Use the rule from Part a to **complete the following table:**

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

c. How many organisms will be present in the sample **after 7 hours (14 thirty minute time periods)?**

d. After **how many** thirty minute periods will there be **10000 cells**?

2. 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** $y = 5{,}000(1.09^x)$ gives the account balance after x years.

a. **How much** money did they put into the account **when Duncan was born**?

b. **What is the interest rate** for this account?

c. **How much money** will be in the account after **18 years**?

d. **When will** the account reach a **balance of $40000.**

3. José **borrows $800** from his brother to fix his car. His brother doesn't like lending José money and so charges him **6% interest** per month.

a. Write a rule in the **"*y* = …" form** that will give the amount of money, *y*, José will owe his brother after *x* months, assuming that he doesn't make any payments

b. If José hasn't paid any money to his brother, **how much** will he owe after **5 months**?

4. The population of Arizona is one of the fastest growing in the country. The table and graph below give the population of Arizona at various times over the past century.

Time since 1920 in years	0	20	40	60	80
Population in millions	.125	.239	.567	1.545	4.034

a. **Use your calculator** to graph the **scatter plot** of the points**. Give the window** from your calculator.

b. Does the function appear to be **linear or exponential**? **How do you know?**

c. **Use your calculator** to **find a model** that could be used to predict the population of Arizona for any year.

d. Use your model to predict the population of Arizona in 2010.

e. In what year does your model predict that the population of Arizona will **first reach 8 million people?**