Name: _____

Exponential Growth and Decay Practice

1. Fill in the chart below.

Equation	Initial Term	RATE as Percent!	Growth or Decay?
$y = 100(0.98)^x$	100	- 2%	Decay
$y = 25(1.25)^x$	25	25%	Growth
$y = 2{,}000(1.02)^x$	2,000	2%	Growth
$y = 800(1-.06)^x$	800	– 6%	Decay

2. Fill in the missing value and write the explicit function for the rule represented below.

Number of Hours	0	1	2	3	4	5
Number of Bacteria	40	60	90	135	202.5	303.75

$y = 40(1.5)^x$

3. Assume that your kidneys can filter out 10% of a medication in your blood every ~~6 hours~~. You take one 200-milligram dose of the medicine. How much medicine is left in your blood after ~~2~~ days (round to the nearest tenth)?

$y = 200(1-.10)^x$

↑ Don't worry about this ☺

4. The population of a city in North Carolina is increasing by 2.1% each year. In 2010 the population was 218,000.
   a. Write an explicit equation to represent the population change.

$y = 218000(1+.021)^x$

   b. Use your equation to predict the city's population in 2020. → 10 years has passed.

268358

5. The mice population on a farm triples every month. After one month, there are 36 mice, after two months there are 108 mice, and after three months, there are 324 mice.

a_2 a_1

0	1	2	3
	36	108	324

÷3 ×3 ×3

a. Write a recursive equation to represent the population change.

$a_n = a_{n-1} \times 3$ $a_0 = 12$

b. What is the initial population of mice on the farm?

12 mice

c. Write an explicit equation to represent the population change.

$y = 12(3)^x$

d. Assuming the pattern continues, how many mice will be on the farm after one year?

6,377,292 mice 12 months

6. An investor chooses a bank that he can put his one million dollars into. The bank offers a four percent rate for their interest, compounded quarterly. How much money will be left in the investor's account after 8 years?

a. Fill in the explicit equation for compound interest.

$A = 1{,}000{,}000\left(1 + \frac{.04}{4}\right)^{4 \times 8}$

b. How much money will he have after 8 years?

$1,374,940.68