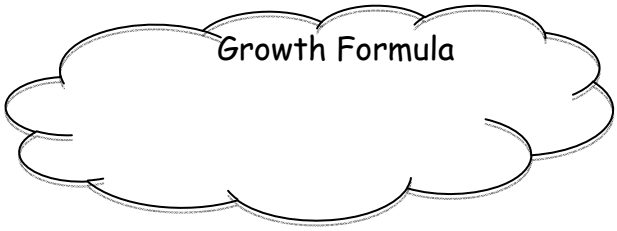
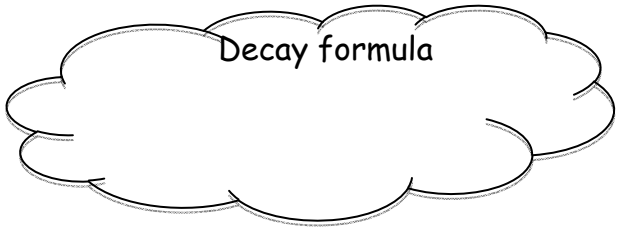
Name: _____ Date: _____

Algebra II; Period : _____ Ms. Ngo

Classwork: Exponential Growth and Decay Problems





$A(t) =$ _____

$a =$ _____

$r =$ _____

$t =$ _____

1. Tania invests $5000 in an account that pays 6.25% interest per year. Write a function to model the growth.

Picture	ART	Function

2. A city population, which was initially 15,500, has been dropping 3% a year. Write an exponential function to model the situation.

Picture	ART	Function

3. In 1981, the Australian humpback whale population was 350 and increased at a rate of 14% each year since then. Write a function to model population growth.

Picture	ART	Function

4. An acidophilus culture containing 130 bacteria doubles in population every hour. Write a function to represent this growth.

Picture	ART	Function

6. Ariel deposits $200 in a savings account. The account pays 5% annual interest. Assuming that he makes no more deposits and no withdrawals, how much will he have in three years?

Picture	ART	Function and answer

7. Amanda purchases a used truck for $11,500. The value of the truck is expected to decrease by 20% each year. What will the value of the truck be in five years?

Picture	ART	Function and answer

8. The population of M&Ms town is decreasing at the rate of 2.5% per year. If the population in the year 2000 was 28,000, what will be the expected population in 2015 if this rate of decrease continues? Give your answer to the nearest thousand.

Picture	ART	Function and answer

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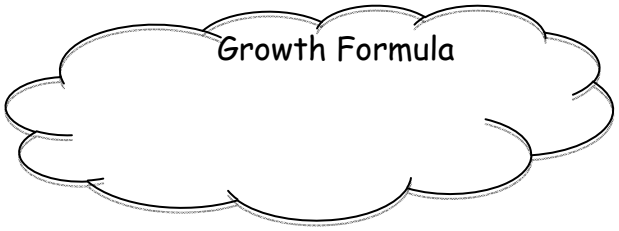
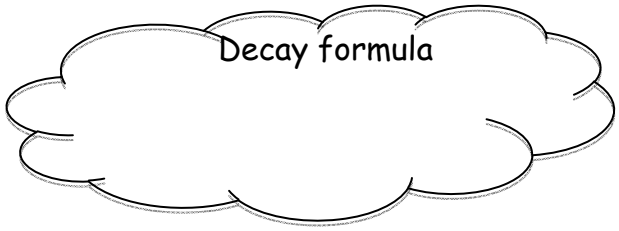
HW # ____: Exponential Growth and Decay Problems





A(t) = _____

a = _____

r = _____

t = _____

1. State the value of b and whether the function shows growth or decay.

a. $f(x)=32(0.5)^x$; b = _____; growth/decay (circle one)

b. $f(x)=0.5(1.5)^x$; b = _____; growth/decay (circle one)

c. $f(x)=0.5\left(\frac{3}{5}\right)^x$; b = _____; growth/decay (circle one)

2. A city population, which was initially 25,500, has been dropping 4% a year. Write an exponential function to model the situation.

Picture	ART	Function

3. In 1983, the Australian kangaroo population was 330 and decreased at a rate of 3% each year since then. Write a function to model population decay.

Picture	ART	Function

4. An acidophilus culture containing 150 bacteria doubles in population every hour. Write a function to represent this growth.

Picture	ART	Function

6. Alma deposits $150 in a savings account. The account pays 6% annual interest. Assuming that she makes no more deposits and no withdrawals, how much will she have in five years?

Picture	ART	Function and answer

7. Sergio purchases a used truck for $12,500. The value of the truck is expected to decrease by 15% each year. What will the value of the truck be in six years?

Picture	ART	Function and answer

8. The population of Hempstead town is decreasing at the rate of 1.5% per year. If the population in the year 2005 was 26,000, what will be the expected population in 2015 if this rate of decrease continues? Give your answer to the nearest thousand.

Picture	ART	Function and answer

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More problems, not used.

4/ A bank is advertising a rate of 5% interest compounded annually. If $2000 is invested in an account at that rate, find the amount of money in the account after 10 years.

5/ In 1985, there were 285 cell phone subscribers in the small town of Centerville. The number of subscribers increased by 75% per year after 1985. How many cell phone subscribers were in Centerville in 1994?

6/ Bacteria can multiply at an alarming rate when each bacteria splits into two new cells, thus doubling. Write an equation to represent this model. Supposing we start with one bacteria, how many bacteria will there be after 24 hours?

7/ Each year, the local country club sponsors a tennis tournament. Play starts with 128 participants. During each round, half of the players are eliminated. How many players remain after 5 rounds?

8/ Eight months ago, Eduardo's parents put $5000 into a savings account that earns 0.25% interest per month. Now, his dentist has suggested he gets braces.

a. Write an equation to model this situation.
b. If Matt's parents use the money in their savings account, how much money do they have?
c. If Matt's dentist had suggested braces 3 months ago, how much money would have been in his parents' savings account?
d. Matt's dentist says he can probably wait up to 2 months before having the braces fitted. How much will be in his parents' saving account if he waits?