Name: _____ Date: _____

Exponential Growth and Decay – Applications

Exponential Models

$$A = P(1+r)^t$$

A = _____

P = _____

t = _____

r = _____

$1+r$ = _____

$$A = P(1-r)^t$$

A = _____

P = _____

t = _____

r = _____

$1-r$ = _____

1. In 1990, the cost of tuition at a state university was $4300. During the next 8 years, the tuition rose 4% each year.

a. Growth or decay? What is the _____ factor?

b. Write a model the gives the tuition y (in dollars) t years after 1990.

c. How much would it cost to attend college in 2000? In 2007?

d. How long it will take for tuition to reach $6000?

2. A 2011 Kia Sorrento depreciates at a rate of 33.6% per year. The car was bought for $32,000.

a. Growth of decay? What is the _____ factor?

b. Write a model the gives the value of the car y (in dollars) t years after 2011.

c. How much is the car worth now? In 2012?

d. How long will it take for the car to be worth half?

$$A = P\left(1 + \frac{r}{n}\right)^{nt}$$

A = _____

P = _____

t = _____

r = _____

n = _____

COMPOUND INTEREST:

Compounded:	**n**
Annually	
Semi-Annually	
Quarterly	
Monthly	
Weekly	
Daily	

3. You invest your $1000 graduation money. A bank is offering a 4% interest rate. Calculate how much money you have after 10 years if the bank compounds:

   a. Annually

   b. Semi-Annually

   c. Quarterly

   d. Monthly

   e. Weekly