Algebra 3-4
Practice Work Sample #2

Name: _____ Per: _____
Date: _____

In 2010 the value of a car was $24,500. Since this time the value has been decreasing. This relationship can be modeled with either a linear or exponential model. The linear model has a constant decrease of $1100 per year. The exponential model has a decrease of 6% per year. Which model indicates a higher value for the car in 2016?

I will figure out which model indicates a higher value in 2016, linear or exponential.

Linear

$y = mx + b$

$y = -1100x + 24500$

Exponential

$y = b(m)^x$

$y = 24500(1 - .06)^x$

From 2010 to 2016 is a 6 year change, so I will plug in $x = 6$:

Linear

$y = -1100(6) + 24500$

$y = 17900$

Exponential

$y = 24500(1 - .06)^6$

$y = 16901.81$

The linear model predicts a higher value, 17900 compared to 16901.81.

I will double check with a table

Year	2010	2011	2012	2013	2014	2015	2016
Linear	24500	23400	22300	21700	20100	19000	17900
Exponential	24500	23030	21648	20349	19128	17981	16902

Algebra 3-4
Practice Work Sample #1

Name: _____ Per: _____
Date: _____

Most homes appreciate in value, at varying rates, depending on the home's location, size and other factors. But if the home is used as a rental, it may actually depreciate. Suppose a house originally costing $150,000 in 1998 depreciates at a rate of 8% per year. Calculate and explain how much the house will be worth in 2013.

MSI I will write a model for the value of the house I will use an exponential model because it changes by a percent rate.

RSI My model is $y = b(m)^x$ where b is the starting value & m is the change. The house loses 8% each year, so $m = 1 - .08$, and $b = 150{,}000$ because that is the starting value.

CR My model is $y = 150000(1-.08)^x$
2013 is 15 years after 1998 because $2013 - 1998 = 15$, so I plug in $x = 15$.

ACC The house would be $y = 150000(1-.08)^{15} = 42944.61$
It would cost $42944.61

R&E I'll double check with a table.

x	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
y	150000	138000	126960	116803	107459	98862	90953	83677	76983	70824	65158	59946	55150	50738	46679	42945