Algebra 1 Bellwork Thursday, March 5, 2015

1. The price of a shirt you want to buy is $24.80. Find the price after using a 15% off coupon.

2. The value of a business in 2009 was $2,500,000. The value has been increasing 11% each year.

a) Find the value of the business in 2010.

b) Find the value of the business in 2011.

c) Find the value of the business in 2013.

The equation $y = a(b)^x$ is an Exponential Equation.
a = initial amount
b = Base (also know as a Growth or Decay Factor)
Exponential Growth when > 1 and Exponential Decay when < 1
x = number of time periods

3. Use each percent change to find the base of an exponential equation.

a) 86.5% decrease. b =

b) 10.4% increase. b =

4. State the percent change each exponential equation represents and whether it's an increase or a decrease.

a) $y = 208(0.037)^x$
% change =

inc or dec?

b) $y = 15.8(1.408)^x$
% change =

inc or dec?

5. Does each exponential equation represent Growth or Decay?

a) $y = 10,000(0.9937)^x$ b) $y = 23\left(\frac{42}{39}\right)^{-x}$ c) $y = 757(1.3000042)^x$

Algebra 1 Bellwork Thursday, March 5, 2015 ANSWERS

1. The price of a shirt you want to buy is $24.80. Find the price after using a 15% off coupon.

$100\% - 15\% = 85\% \rightarrow .85$

$(24.80)(.85) =$ **$21.08**

2. The value of a business in 2009 was $2,500,000. The value has been increasing 11% each year.

a) Find the value of the business in 2010.

$100\% + 11\% = 111\% \rightarrow 1.11$

$(2{,}500{,}000)(1.11) =$ **$2,775,000**

b) Find the value of the business in 2011.

$(2{,}500{,}000)(1.11)(1.11) =$ **$3,080,250**

(2010)

c) Find the value of the business in 2013.

$(2{,}500{,}000)(1.11)(1.11)(1.11)(1.11) = (2{,}500{,}000)(1.11)^4 =$ **$3,795,176.03**

(2010, 2011, 2012, 2013)

The equation $y = a(b)^x$ is an Exponential Equation.

a = initial amount

b = Base (also know as a Growth or Decay Factor)

Exponential Growth when > 1 and Exponential Decay when < 1

x = number of time periods

3. Use each percent change to find the base of an exponential equation.

a) 86.5% decrease. b = 0.135

$100\% - 86.5\% = 13.5\%$

b) 10.4% increase. b = 1.104

$100\% + 10.4\% = 110.4\%$

4. State the percent change each exponential equation represents and whether it's an increase or a decrease.

a) $y = 208(0.037)^x$ $3.7\% - 100\% = -96.3$

% change = 96.3 %

inc or dec? Dec

b) $y = 15.8(1.408)^x$ $140.8\% - 100\% = 40.8\%$

% change = 40.8 %

inc or dec? Inc

5. Does each exponential equation represent Growth or Decay?

a) $y = 10{,}000(0.9937)^x$ $\not< 1$ Growth Decay

b) $y = 23\left(\frac{42}{39}\right)^{-x}$ $23\left(\frac{39}{42}\right)^{x}$ < 1 Decay

c) $y = 757(1.3000042)^x$ > 1 Growth