**Choice 1**

Your parents lost some of their bank statements and they can’t remember how much money they initially put in the bank or what interest rate they are earning. They found a statement that said after 3 years they had $281.22 in the account and after 6 years they had $316.37.

a) Solve for the multiplier. What is their interest rate and is it increasing or decreasing?

b) How much money did your parents initially invest?

c) What is the exponential equation that represents how much money your parents have in the account after x years from when they opened it?

d) How much money will they have in the account (if they make no withdrawals) 20 years from when they opened it?

**Choice 2**

For biology you have decided to research animal extinction. You found an article in the library but some of the information was missing. It was about the red fox population. The article said that 3 years after the study began there were 2,915 red foxes. Seven years after the study began there were 1,829 red foxes.

a) Solve for the multiplier. What is the percentage rate? Is it increasing or decreasing?

b) How many foxes were there initially when the study began?

c) What is the exponential equation that represents the red fox population?

d) How many foxes will there be 15 years from when the study began?

e) Approximately how long will it take for the population to become extinct if nothing is done to save the population?

**Lesson 3 Exit Ticket KEY**

**Choice 1**

Your parents lost some of their bank statements and they can’t remember how much money they initially put in the bank or what interest rate they are earning. They found a statement that said after 3 years they had $281.22 in the account and after 6 years they had $316.37.

a) Solve for the multiplier. What is their interest rate and is it increasing or decreasing?

Using y = abx, plug in 281.22 = ab3 and rewrite in terms of a. a = 281.22/(b3).

Now substitute that in for a using the next point. 316.37 = 281.22b6 and solve for b.

b3

316.37 = 281.22b3 1.125 = b3 **b = 1.04**

This represents a 4% interest rate (increasing).

b) How much money did your parents initially invest?

Using y = abx, plug in one of the points and the value for b we just found.

281.22 = a(1.04)3 **a = $250**

c) What is the exponential equation that represents how much money your parents have in the account after x years from when they opened it?

**y = 250(1.04)x**

d) How much money will they have in the account (if they make no withdrawals) 20 years from when they opened it?

y = 250(1.04)20 = **$547.78**

**Choice 2**

For biology you have decided to research animal extinction. You found an article in the library but some of the information was missing. It was about the red fox population. The article said that 3 years after the study began there were 2,915 red foxes. Seven years after the study began there were 1,829 red foxes.

a) Solve for the multiplier. What is the percentage rate? Is it increasing or decreasing?

Using y = abx, plug in 2915 = ab3 and rewrite in terms of a. a = 2915/(b3).

Now substitute that in for a using the next point. 1829 = 2915b7 and solve for b.

b3

1829 = 2915b4 .62744 = b4 **b = .89**

This represents an 11% decrease.

b) How many foxes were there initially when the study began?

Using y = abx, plug in one of the points and the value for b we just found.

2915 = a(.89)3 **a = 4135**

c) What is the exponential equation that represents the red fox population?

**y = 4135(.89)x**

d) How many foxes will there be 15 years from when the study began?

y = 4135(.89)15 = **720 foxes**

e) Approximately how long will it take for the population to become extinct if nothing is done to save the population? 0 = 4135(.89)x Use the table in your calc and see when x goes from 1 to a decimal less than 1. About 71 to 72 years.