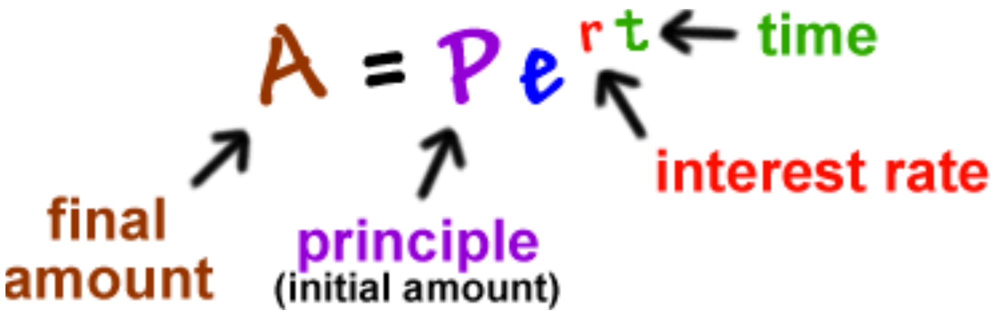
Station #1: Continuously Compounded Interest

Continuously Compounded Interest is a great thing when you are earning it! Continuously compounded interest means that your principal is constantly earning interest and the interest keeps earning on the interest earned!



1. If you invest $1,000 at an annual interest rate of 5% compounded continuously, calculate the final amount you will have in the account after five years.

2. If you invest $2,000 at an annual interest rate of 13% compounded continuously, calculate the final amount you will have in the account after 20 years.

Station #2: Compound Interest Formula

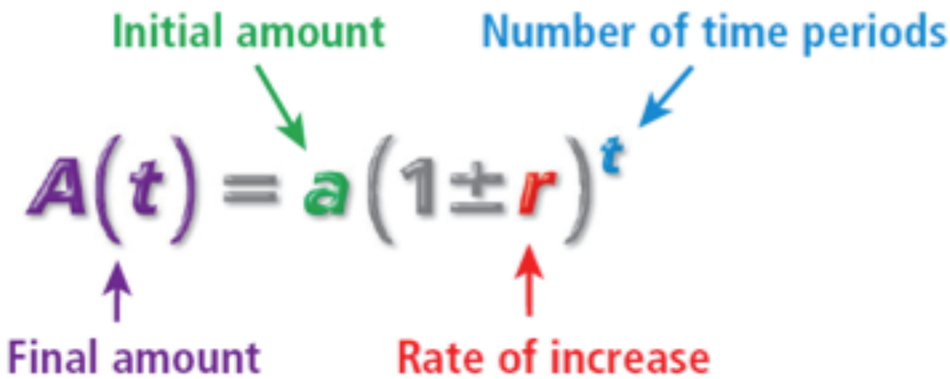
$$A = P\left(1 + \frac{r}{n}\right)^{nt}$$

A = Amount accumulated
P = principal
r = interest rate
n = compoundings per period
t = number of periods

1. You invested $40,000 at 4% interest compounded quarterly 25 years ago. How much is it worth now?

2. You borrowed $1,690 for 5 years at a 5.7% compounded semi annually. What total will you pay back?

Station #3: Exponential Growth & Decay



1. The world population in 2000 was approximately 6.08 billion. The annual rate of increase was about 1.26%.
   a. Find the growth factor for the world population.

   b. Suppose the rate of increase continues to be 1.26%. Write a function to model the world population.

   c. Let x be the number of years past the year 2000. Find the world population in 2030. Write your answer in billions.

2. A new car that sells for $18,000 depreciates 25% each year.
   a. Write a function that models the value of the car.

   b. Find the value of the car after 4 years.

Station #4: Graphing Exponential Functions

Graph the following exponential functions. Make a table of 5 x and y values. State the domain and range of the function.

1. $f(x) = 3\left(\frac{1}{2}\right)^x$

2. $f(x) = \frac{1}{3}(2)^x$

Station #5: Evaluating Logarithmic Expressions

Evaluate each expression.

25) $\log_3 1$

26) $\log_{17} 289$

27) $\log_{19} 361$

28) $\log_9 \frac{1}{81}$

Station #6: Graphing Logarithmic Functions

Graph the following exponential functions and stat the domain and range.

1. $f(x) = \log(5x)$
2. $f(x) = \log(x - 2)$

Station #7: Writing Exponential Equations in Logarithmic Form

Logarithm – The exponent, n, to which the base b must be raised to equal a, written as $\log_b a = n$.

Example: $\log_2 8 = 3$ since $2^3 = 8$.

Logarithmic form – The expression or an equation containing logarithms.

Example: The equation $\log_3 y = x$ is the logarithmic form of the exponential equation $3^x = y$.

Rewrite each equation in logarithmic form.

17) $5^3 = 125$

18) $16^2 = 256$

19) $2^2 = 4$

20) $20^{-2} = \frac{1}{400}$

Station #8: Writing Logarithmic Equations in Exponential Form

Rewrite each equation in exponential form.

1) $\log_{13} 1 = 0$

2) $\log_3 3 = 1$

3) $\log_4 64 = 3$

4) $\log_6 216 = 3$