

Compound Interest (or, "When will I ever use exponential functions in real life?")

Compound interest is an example of a real-world exponential function. You can use the formulas to calculate the value of interest over time. For example, you would use it to calculate how much money you would have in the bank after interest is applied.

First, you must know that there are two types of compound interests. One, continuous compound, is when interest is steadily and constantly applied. The next, which is more common in real life, is non-continuous. This is when interest is calculated every month, every six months, or any other specific set time period.

The equations to find the values are simple once you learn the definitions of the variables. They are:

* P stands for principle. This is how much you are putting into the account in the beginning (in dollars)

* E is 2.71 in all cases

* R is the interest rate. If it is given as a percentage, convert it to a decimal before solving. In other words, if the word problem says that an account has 5% interest, you would use .5 in your equation.

* T is time in years. Be careful. If you're given 6 months, t is not 6. It is .5, because it is half of one year

* N is the number of times per year interest is applied. It is only used in non-continuous equations.

* A is the answer

The equations are:

Compound continuous: $A = Pe^{(rt)}$

Non-continuous: $A = P(1 + r/n)^{(nt)}$