Compound Interest

Compound Interest is one of three types of interest you will learn in Algebra 1, the other two being simple interest and continuously compounded interest. Each type has a formula that you use for all types of these problems.

The formula for compound interest is:

$$B = p\,(1 + r)^t$$

B = The balance (FINAL amount)

p = The principal (STARTING amount)

r = The interest rate (as a DECIMAL)

t = Time in YEARS

The key to solving compound interest problems is to find out p, r, and t from the question and then plug them into the formula above to find B.

Let's practice with a couple of examples!

Jason has $30 in an account that earns 20% compounded annually. To the nearest cent, how much will he have in 4 years?

We know what p, r, and t are from the question, so use the formula $B = p(1 + r)^t$ to solve for B.

$p = \$30$ $r = 0.2$ $t = 4$

$$B = p\,(1 + r)^t$$

$$B = \$30(1 + 0.2)^4$$

$$B = \$30\,(1.2)^4$$

$$B = \$30\,(2.0736)$$

$$B = \$62.21$$

Emily has $50 in an account that earns 5% compounded annually. To the nearest cent, how much will she have in 2 years?

$p = \$50$ $r = 0.05$ $t = 2$

$$B = \$50\,(1 + 0.05)^2$$

$$B = \$50\,(1.05)^2$$

$$B = \$50\,(1.1025)$$

$$B = \$55.13$$

Tips for Solving Problems:

1. Remember the formula for compound interest, $B = p\ (1 + r)^t$! This formula will help you find the total amount of money someone has in an account that has interest being compounded annually.

2. Remember the interest rate as a decimal plus 1 is being raised to the t power! Make sure to raise 1 + r to the power of t instead of multiplying the 2 together.

3. Remember that the interest rate has to be converted to a decimal from a percentage (divide the percentage by 100) and t is in years, so if you get t in months, it needs to be converted to years.