Mini Lesson 1: What-IF Analysis (Goal Seek)

Revised August 2016

Requires Compound Interest Part I Project as Prerequisite

**Goal Seek** is a command on Excel used to compute the correct input when only the output is known.

For example, Greg may want to know how much he must earn per hour in order to gross $2000 monthly if the max amount of hours he can work is 160 per month. Using Goal Seek will help him determine how much he should earn (input) when his goal is to earn $2000 a month (output). To determine how much he must be paid to earn a gross of $2000, the What-IF Analysis (Goal Seek) can be used as follows:

In cell K3, type in the formula that will calculate gross pay:

    = Hours worked*Pay per hour

    =K1*K2

Then, click on cell K3 and use Goal Seek:
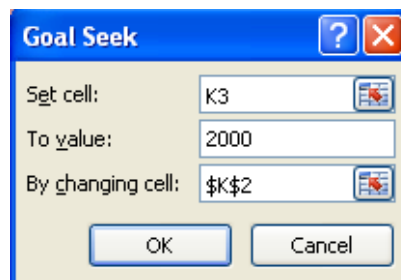
Once the information has been entered, Goal Seek will calculate the pay per hour that will allow Greg to reach his goal, which is $12.50.

Click on the tab with the worksheet titled Mini Lesson 2 to continue.

Mini Lesson 2: Compound Interest

Another formula used to calculate compound Interest is:

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

Where:

    A = balance at the end of x years including interest

    P = principal amount or initial deposit

    r = annual rate of interest

    n = number of times/periods interest is compounded per year

t = number of years amount is deposited/borrowed

For example, Kathy borrowed $20000 (in cell L1) with an annual interest rate of 2.4% (in cell L2) compounded quarterly (in cell L4) for 6 years (in cell L3). The formula that should be written to calculate compound interest in this example should be as follows:

=L1*(1+L2/L4)^(L4*L3)

Enter the formula above in cell L5. Using this formula, Kathy should have a balance of $23,087.75.

Click on the tab with the worksheet titled Activity 1 to begin.

Activity 1: Compute Interest using What-IF Analysis (Goal Seek)
a. Timothy is currently 25 years old and plans to save a million dollars by the time he turns 65. He knows a bank that offers an APR of 6.5% compounded quarterly. What should his initial deposit be in order to achieve his goal?
b. Jessamyn wants to save $500,000 in 20 years. She makes an initial deposit of $95,000 to be compounded semi-annually. What must the interest rate be in order to complete her goal?
c. Natalie makes an initial deposit of $20,000 to a bank that offers an interest rate of 4.32% compounded annually. How many years would it take until she can reach her goal of $30,000? *Round up to the nearest whole year.*

Directions:
a. Create a copy of the current worksheet and rename the worksheet "Activity 1 Solution."
b. Type in the amounts given from Activity 1a in cells B4:B6.
c. Use the Compound Interest formula from Mini Lesson 2 to calculate the Balance in cell B7.
d. Use Goal Seek to find the Initial Deposit amount. When using Goal Seek, set cell B7 to value 1 million dollars by changing cell B3.
e. Type in the amounts given from Activity 1b in cells B9, B11, and B12.
f. Use Goal Seek to find the Annual Percentage Rate (APR). When using Goal Seek, set cell B13 to value $500,000 by changing cell B10.
g. Type in the amounts given from Activity 1c in cells B15, B16, and B18.
h. Use Goal Seek to find the number of Years. When using Goal Seek, set cell B19 to value $20,000 by changing cell B17. *Be sure to round up to the nearest whole number for Years*.
i. Change cells A3:A7, A9:A13, and A15:A19 to Bold Font, then right align.
j. Fill color for cell areas A3:A7, A9:A13, and A15:A19 to Light Red.
k. Format cells B3, B7, B9, B13, B15, and B19 to Currency with 2 decimal places, comma separator, and $ symbol.
l. Format cells B4, B10, and B16 to Percentage with 2 decimal places and % symbol.

m. Format cells B5, B6, B11, B12, B17, and B18 to Number with 0 decimal places.
n. Locate the Check Spelling tool under the Review tab and use it.
o. Save file as Compound Interest Part II XX, where XX are your initials.