

**Homework:** Lesson #1 on Pg. 507 #1-9

This lesson is based off an article on

[http://www.tvmcalcs.com/index.php/calculators/excel\\_tvm\\_functions/excel\\_tvm\\_functions\\_page1](http://www.tvmcalcs.com/index.php/calculators/excel_tvm_functions/excel_tvm_functions_page1)

**Warm-up**

Use a spreadsheet to calculate the future value and interest for a \$3200 investment compounded annually at 3.38% for 15 years.

$$FV = 5268.63 \quad I = 2068.63$$

At the end of last lesson, I mentioned two problems that we could only kind of solve using a spreadsheet. These problems involved calculating something other than the future value or interest. To do this, we need to use special functions in Excel called Time Value of Money (TVM) functions.

Purpose	Calculator Key (Workbook)	Excel Function
Solve for Number of Periods	N <i>years</i>	<u>NPer</u> (rate, pmt, pv, fv, type)
Solve for periodic <u>interest rate</u>	I%	<u>Rate</u> (nper, pmt, pv, fv, type, guess)
Solve for <u>present value</u>	PV	<u>PV</u> (rate, nper, pmt, fv, type)
Solve for <del>annuity</del> payment <i>later</i>	PMT	<u>PMT</u> (rate, nper, pv, fv, type)
Solve for <u>future value</u>	FV <i>← already did</i>	<u>FV</u> (rate, nper, pmt, pv, type)

These equations include **A LOT** of stuff, and some of it we haven't talked about yet so don't worry!

Here's a guide to relate the inputs of these functions back to our last lesson:

**Note:** all these functions only work for compound interest (No one really uses simple interest)

<u>rate</u> – interest rate	<u>nper</u> – number of periods (years for now)	<u>pmt</u> – payment amount per period (Don't worry about this yet)
<u>pv</u> – present value	<u>fv</u> – future value	<u>type</u> – payment at start or end of month (Not there yet)

**Cash flow sign convention:**

If you are giving money, it's negative. If you are getting money, it's positive.  
*wavy* *take out*

### Spreadsheet Organization Tips:

1. Make a new file for each lesson or assignment (that way you can look back later)
2. Make a new sheet for each question (that way you don't get numbers mixed up)
  - a. You can copy an old sheet to use as a template to help with future questions!
3. Every column/variable should have a label or heading (so you know what each number means)

### Ex 1

Use TVM functions to calculate the future value and interest for a \$3200 investment compounded annually at 3.38% for 15 years. (*Same as warm-up*)

For this question, we are solving for the FV and we will be using the FV function.

$$\text{FV} = \$5268.63$$

Answer: I = \$2068.63

### Ex 2

The "Rule of 72" is a trick to estimate how long it will take for an investment to double in value (see pg. 506 in the workbook). Use TVM functions to calculate the number of years for an investment of \$300 to double in value at 4.55% interest per year. (*Round to the nearest hundredth of a year*)

For this question, we are solving for the # of years and we will be using the NPer function.

Answer: 15.58 years

### Ex 3

If you need to save up \$10,000 for a new car in 8 years, how much do you need to invest at an interest rate of 6.2% per year?