# Foundations 12 –Compound Interest Functions in Excel

*This lesson is based off an article on*
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.

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 | **NPer**(**rate**, **pmt**, **pv**, *fv*, *type*) |
| Solve for periodic interest rate | I% | **Rate**(**nper**, **pmt**, **pv**, *fv*, *type*, *guess*) |
| Solve for present value | PV | **PV**(**rate**, **nper**, **pmt**, *fv*, *type*) |
| Solve for annuity payment | PMT | **PMT**(**rate**, **nper**, **pv**, *fv*, *type*) |
| Solve for future value | FV | **FV**(**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)

| | | |
|---|---|---|
| **rate** – interest rate | **nper** – number of periods *(years for now)* | **pmt** – payment amount per period *(Don't worry about this yet)* |
| **pv** – present value | **fv** – future value | **type** – 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.

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 _____ and we will be using the _____ function._

Answer: _____

**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 _____ and we will be using the _____ function._

Answer: _____

**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?

_For this question, we are solving for the _____ and we will be using the _____ function._

Answer: _____

**Ex 4**
If you need to save up $10,000 for a new car in 8 years and you have $6,000, what is the minimum interest rate per year you can invest at?

_For this question, we are solving for the _____ and we will be using the _____ function._

Answer: _____