BOOST YOUR SKILLS IN

Microsoft Excel 365/2021

Chapter 8: Financial Functions and What-If Analysis

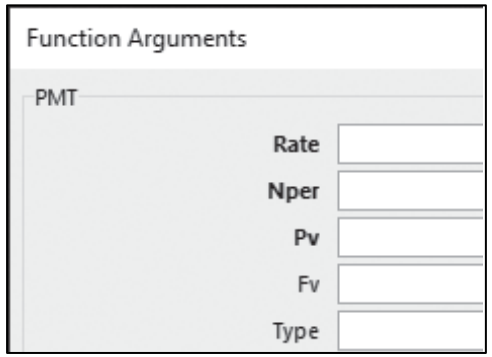
Learning Objectives

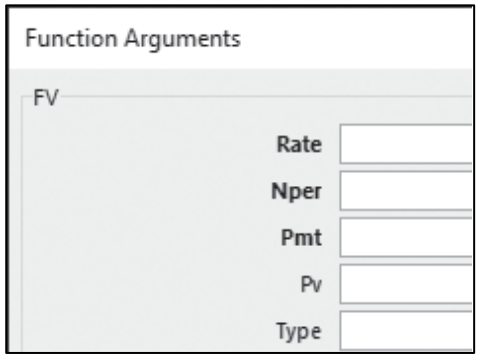
After studying this chapter, you will be able to:

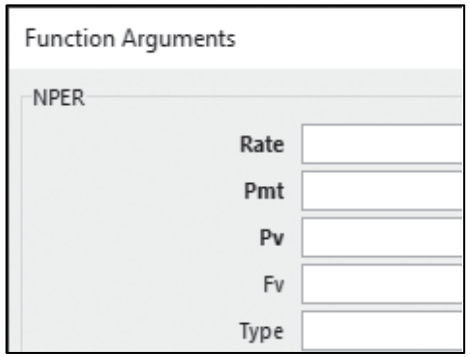
- Create financial functions
- Create one-variable and two-variable data tables
- Use the What-If Analysis tools to create scenarios
- Adjust input values using Goal Seek

Creating Financial Functions

- You can use them to calculate monthly payments, investment worth, how long to pay off debt, etc.
- They are valuable for decision-making, analysis, and forecasting.
- Financial function arguments are values that factor into the calculation and are similar for many functions.







Financial Function Arguments

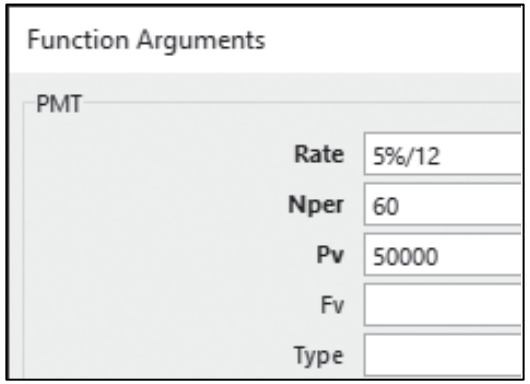
The arguments used in many financial functions are described below:

FINANCIAL FUNCTION ARGUMENTS	
Argument	**Description**
Rate	Interest rate per payment period; so if the annual interest rate is 5%, the interest rate per period for a monthly payment would be 5% / 12
Nper	Number of payment periods over the life of the loan or investment, often monthly; so a five-year loan with monthly payments would have 5 x 12 = 60 payment periods
Pmt	Payment made on the loan or amount invested each period, which is a constant value (cannot change) over the life of the loan or investment
Pv	Loan amount or initial amount invested (Present Value)
Fv	Ending balance; for loans it's usually zero (or omitted) to pay off the loan, and for investments it's the desired amount at the end of the term (Future Value)
Type	Indicates whether payments are due at the beginning or end of each period

PMT Function

- This is short for “Payment.”
- It calculates the amount of each payment required to pay off a loan.
- It also calculates how much to save each month to reach a future value amount.
- It assumes payments and interest remain constant over the life of the loan.

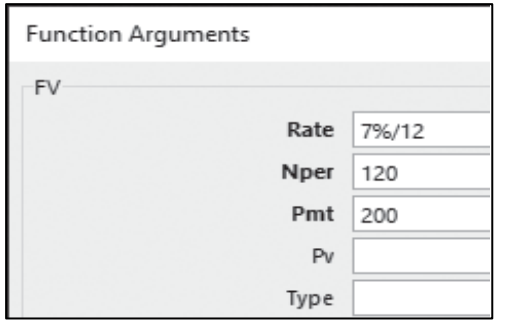
This example will calculate the payment amount for a five year (60 month) $50,000 loan at 5%.



FV Function and NPER Function

FV function (future value)

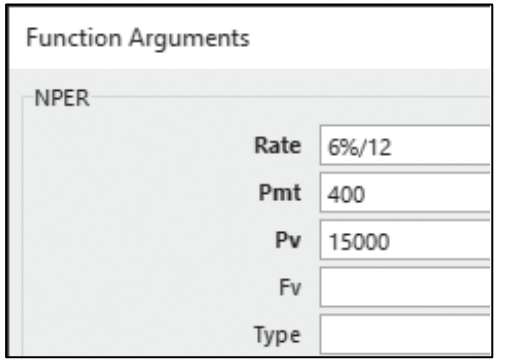
- This calculates the future value of an investment for a specific interest rate, investment length, and payment.



This example will calculate the future value of an investment when saving $200 for 120 months at 7%.

NPER function (number of periods)

- This calculates the number of periods required to reach a financial goal.



This example will calculate how long it will take to pay off a $15,000 loan at 6% when paying $400 per month.

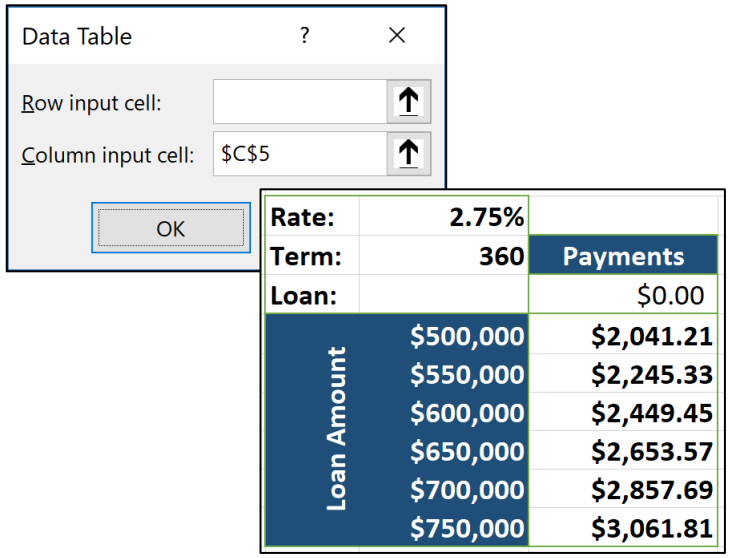
Using What-If Analysis Tools

- They ask a question–what if?
  - What if the interest rate increases on my loan?
  - What if I invest $200 per month instead of $150?
- Tools available:
  - Scenario Manager
  - Goal Seek
  - Data Tables
- They work best with complex formulas such as PMT, FV, and NPER.

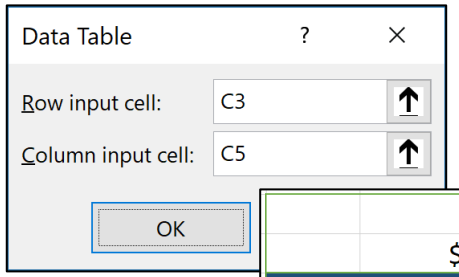
Data Tables

Data Tables are NOT Excel tables.

- There is no sorting or filtering or inserting a total row.
- You can insert multiple different argument values and see results all at once.



Rate:	2.75%	
Term:	360	Payments
Loan:		$0.00
Loan Amount	$500,000	$2,041.21
	$550,000	$2,245.33
	$600,000	$2,449.45
	$650,000	$2,653.57
	$700,000	$2,857.69
	$750,000	$3,061.81

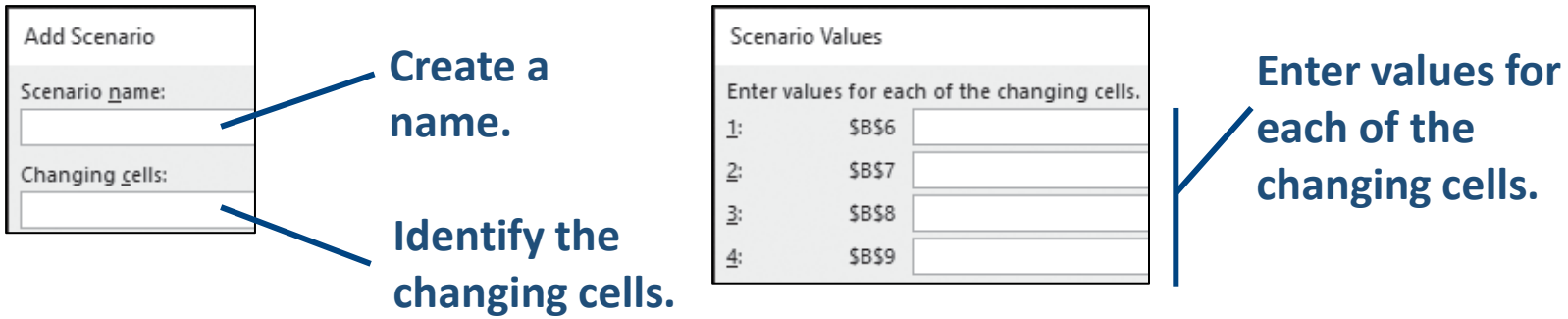


Example of a two-variable data table

		Rate			
	$0.00	2.25%	2.50%	2.75%	3.00%
Loan Amount	$500,000	$1,911.23	$1,975.60	$2,041.21	$2,108.02
	$550,000	$2,102.35	$2,173.16	$2,245.33	$2,318.82
	$600,000	$2,293.48	$2,370.73	$2,449.45	$2,529.62
	$650,000	$2,484.60	$2,568.29	$2,653.57	$2,740.43
	$700,000	$2,675.72	$2,765.85	$2,857.69	$2,951.23
	$750,000	$2,866.85	$2,963.41	$3,061.81	$3,162.03

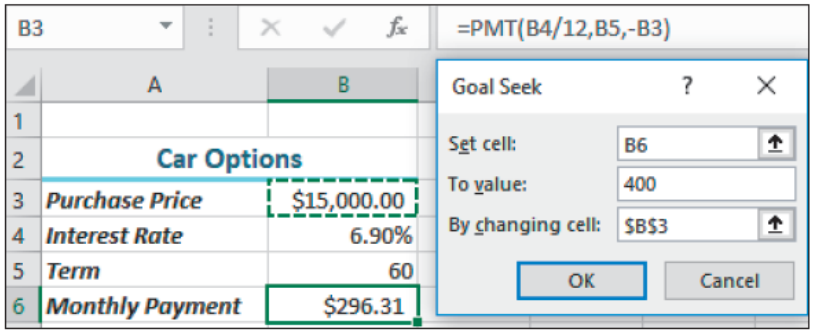
Scenario Manager

- You can compare results with multiple possibilities.
  - Up to 32 variables
- The results show in a worksheet or scenario summary report.
- Scenarios require a scenario name, the identification of the changing cells, and a value for each changing cell.



Goal Seek

- Know the result you want first.
- Excel works backward to find the required input.



In this example, the total monthly payment amount is being manipulated in order to determine the maximum purchase price.