Microsoft Office - Illustrated Introductory

Working with Formulas and Functions
Objectives

• Create a complex formula
• Insert a function
• Type a function
• Copy and move cell entries
• Understand relative and absolute cell references
Objectives

• Copy formulas with relative cell references
• Copy formulas with absolute cell references
• Round a value with a function
Creating a Complex Formula

- A **complex formula** is an equation that uses more than one type of arithmetic operator
  - Example: formula that uses both addition and multiplication
  - Arithmetic operations are performed according to the order of precedence
Creating a Complex Formula

Formula containing multiple arithmetic operators

Complex formula

Mode indicator
Creating a Complex Formula

- **Order of precedence in Excel formulas**
  - Operations inside parentheses are calculated first
  - EVistaonents are calculated next
  - Multiplication and division are calculated next (from left to right)
  - Addition and subtraction are calculated next (from left to right)
Inserting a Function

• A function is a predefined worksheet formula that makes it easy to perform a complex calculation
  • Can be used by itself or within a formula
  • If used alone, begins with the formula prefix (=)
Inserting a Function

Function Arguments dialog box

- **Function** button
- **Argument**
- **Description and argument format**
Typing a Function

• A function can be typed manually into a cell
  • You must know the name and initial characters of the function
  • Can be faster than using the Insert Function dialog box
  • EVistaerienced Excel users often prefer this method
Typing a Function

• While manually typing a function, it is necessary to begin with the equal sign (=)

• Once you type an equal sign, each letter you type activates the AutoComplete feature
Typing a Function

MAX function in progress

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>20% rise</td>
<td>386122.344</td>
<td>410969.712</td>
</tr>
<tr>
<td>15</td>
<td>Average</td>
<td>40221.0775</td>
<td>42809.345</td>
</tr>
<tr>
<td>16</td>
<td>Maximum</td>
<td>=MAX(</td>
<td>)</td>
</tr>
<tr>
<td>17</td>
<td>Minimum</td>
<td>MAX(number1, [number2], ...)</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Copying and Moving Cell Entries

- You can copy or move data within a worksheet or between worksheets using:
  - Cut, Copy, and Paste buttons
  - Fill handle in the lower-right corner of the active cell
  - Drag-and-drop feature
  - Office Clipboard temporarily stores information that you copy or cut
Copying and Moving Cell Entries

• Pasting an item from the Clipboard
  • Only need to specify the upper-left cell of the range where you want to paste the selection
Copying and Moving Cell Entries

Copied data in Clipboard

- Paste button
- Copy button
- Clipboard launcher
- Item in Clipboard
Understanding Relative and Absolute Cell References

- Use a **relative cell reference** when you want to preserve the relationship to the formula location
  - Calculations are performed based on cell relationship
  - When a formula is copied, the cell reference changes to preserve the relationship of the formula to the referenced cells
  - The Excel default
Understanding Relative and Absolute Cell References

Formulas containing relative references
Understanding Relative and Absolute Cell References

• Use an **absolute cell reference** when you want to preserve the exact cell address in a formula
  • Reference does not change even if the formula is copied to another location
  • Created by placing a dollar sign ($$) before both the column letter and the row number for the cell’s address
Understanding Relative and Absolute Cell References

Formulas containing absolute and relative references

- **Cell referenced in absolute formulas**
- **Relative references adjust**
- **Absolute references do not adjust**
Understanding Relative and Absolute Cell References

- Using a **mixed reference**
  - A mixed cell reference combines both relative and absolute cell referencing
    - Example: When you copy a formula, you may want to change the row reference but keep the column reference
  - Created using the [F4] function key
Copying Formulas with Relative Cell References

- Reuse formulas you have created
- Use Copy and Paste commands or the fill handle to copy formulas
- Copying a formula to a new cell
  - Excel substitutes new cell references so that the relationship of the cells to the formula remains unchanged
Copying Formulas with Relative Cell References

Copying a formula with the fill handle

Paste button list arrow

Fill handle

Auto Fill Options button
Copying Formulas with Relative Cell References

- Auto Fill feature can be used for filling cells with sequential text or values
  - Months of the year; days of the week; or text plus a number (Quarter 1, Quarter 2, etc.)
  - Drag the fill handle to extend an existing sequence
Copying Formulas with Absolute Cell References

• Apply absolute cell reference before copying a formula if you want one or more cell references to remain unchanged in relation to the formula
Copying Formulas with Absolute Cell References

Creating an absolute reference in formula

Absolute cell reference in formula

Incorrect values from relative referencing in copied formulas
Rounding a Value with a Function

• Cells containing financial data are often easier to read if they contain fewer decimals

• Use the ROUND function to round down your results
Rounding a Value with a Function

Adding a function to an existing formula

ROUND function and opening parenthesis inserted in formula

ScreenTip indicates what information is needed