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Microsoft Excel 365/2021

Excel Chapter 3: Performing Calculations Using Functions

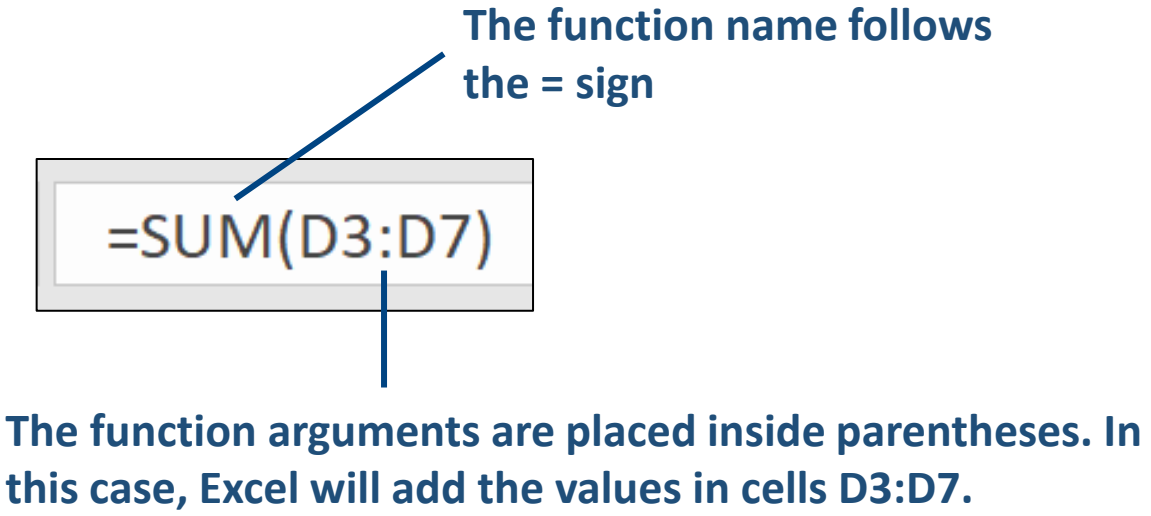
Learning Objectives

After studying this chapter, you will be able to:

- Create formulas with functions
- Use AutoSum
- Use relative and absolute cell references in formulas
- Define names for cells and ranges
- Use names in formulas

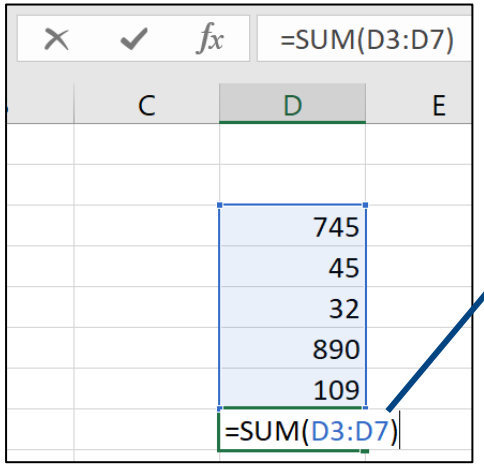
Using Functions in Formulas

- Functions allow you to easily perform mathematical operations on ranges of cells.
- They start with an “=” sign, just like all formulas.



Using Functions in Formulas (cont.)

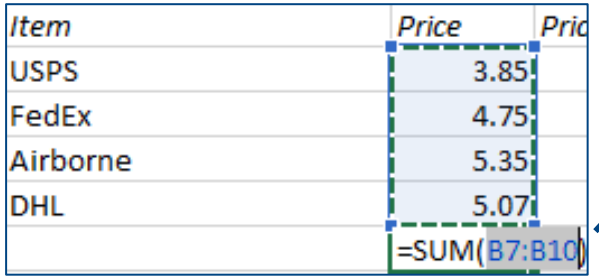
- They can be typed directly into a cell or inserted a number of other ways:
  - AutoSum
  - Formulas tab on the Ribbon
  - Insert Function button



A function that sums (adds) all numbers in a range can be typed into a cell or entered using one of the other three options.

Using Functions in Formulas (cont.)

- Use the AutoSum feature.



Item	Price	Pric
USPS	3.85	
FedEx	4.75	
Airborne	5.35	
DHL	5.07	
	=SUM(B7:B10)	

AutoSum automatically adds adjacent cells in columns or rows.

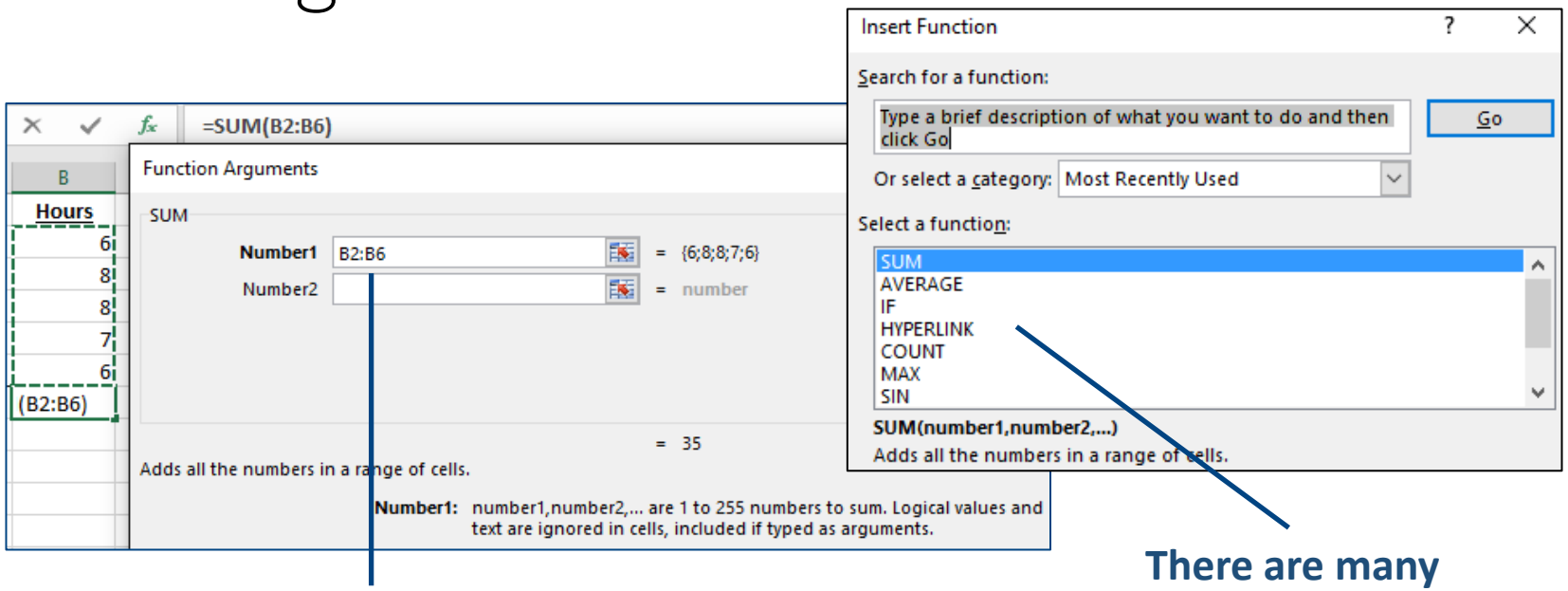
- AutoSum Functions
  - SUM
  - AVERAGE
  - COUNT
  - MAX
  - MIN

Item	Price
USPS	3.85
FedEx	4.75
Airborne	5.35
DHL	5.07
	19.02
Average Rate	4.76
Highest Rate	5.35
Lowest Rate	3.85

The name of the function tells Excel which operation to perform on a selected cell range.

Insert Function

Clicking the Insert function button displays the Insert Function dialog box.



The Function Arguments dialog box displays the range of cells to be included in the function.

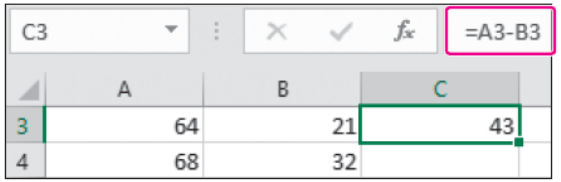
There are many functions from which to choose.

Using Relative Cell References

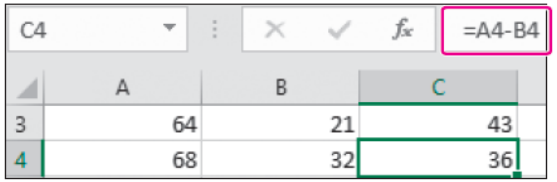
- When you copy a formula, relative cell references update automatically and refer to new cells relative to the new formula cell.
- A relative cell reference will change when it is copied from one cell to another.

Item Name	Quantity	Price	Subtotal
T-shirts	200	12.99	=C4*D4
Buttons	100	6.5	=C5*D5
Hamburgers	45	9.29	=C6*D6
Buns	45	2.19	=C7*D7
Water	12	1.99	=C8*D8

Relative cell references



The original formula is seen in the Formula Bar, with relative references to both cells A3 and B3.



The copied formula is displayed with the new cell references A4 and B4.

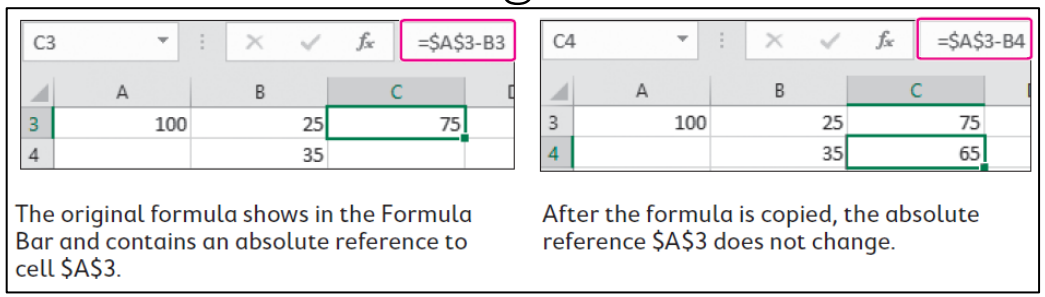
Using Absolute Cell References

- Absolute references always refer to the same cell, regardless of which cell the formula is moved or copied to.

  NOTE! Absolute cell references are denoted with $ signs.

E	F
Tax Rate:	0.08
Subtotal	**Tax**
=C4*D4	=E4*F1
=C5*D5	=E5*F1
=C6*D6	=E6*F1
=C7*D7	=E7*F1
=C8*D8	=E8*F1

- There are two ways to create an absolute cell reference:
  - Type the cell reference, including $ in front of the column and row references.
  - Use the mouse pointer to select the cell and tap [F4] on the keyboard to insert the dollar signs.



The original formula shows in the Formula Bar and contains an absolute reference to cell A3.

After the formula is copied, the absolute reference A3 does not change.

Mixed Cell References

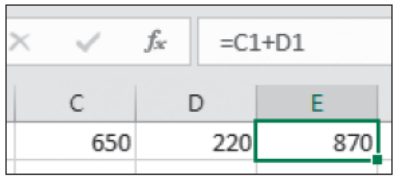
- You can combine a relative and absolute reference in a cell reference.
- This can be useful when copying a formula both across a row and down a column.
- Tapping the [F4] key will toggle between the four different cell reference options.

In $C5, the column reference, C, is absolute and the row reference, 5, is relative.

In C$5, the column reference, C, is relative and the row reference, 5, is absolute.

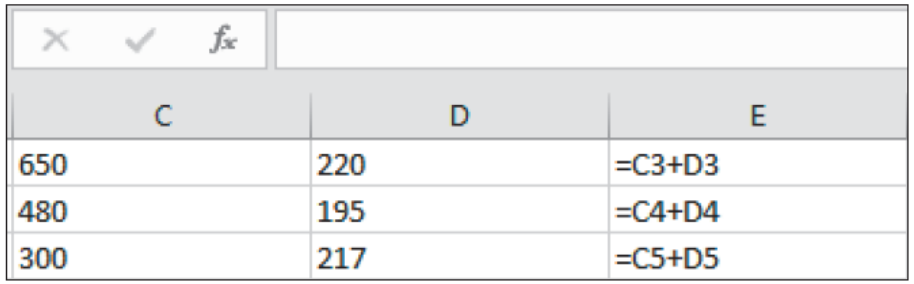
Display and Print Formulas

You can choose to display formulas, rather than the resulting values, in cells.



Normally you must select a cell to see the formula, and it appears in the Formula Bar.

When Show Formulas is turned on, you see the formulas in the worksheet but not in the results.

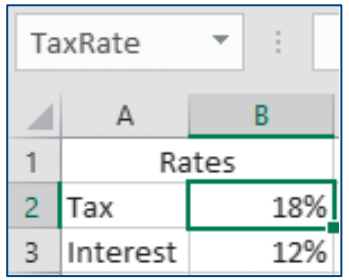


C	D	E
650	220	=C3+D3
480	195	=C4+D4
300	217	=C5+D5

TIP! Use the Show Formulas button, found in the Formula Auditing group on the Formulas tab of the Ribbon, to toggle between displaying formulas and values.

Creating Names for Cells and Ranges

- Use names for a range of cells used often in formulas.
  - Easier to remember than a cell range
  - Cannot contain a space



Name Box displaying name of selected cell(s)

- A cell name in a formula acts as an absolute cell reference.

Notice how the cell name is used in the formula and what the resulting value is.