

# TERMS AND DEFINITIONS

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## Spreadsheet

A table which displays numbers in rows and columns, used for accounting, budgeting, financial analysis, scientific applications, and other work with figures. Originally, paper spreadsheets were used; the computerized versions have the advantage of being able to perform automatic calculations on changing data. Each location in a spreadsheet is called a cell, and each cell has a reference, such as A3, B4, etc.

- A spreadsheet consists of cells organised into rows and columns.
- A spreadsheet is sometimes referred to as a worksheet because parts of its conceptual design (definable rows and columns, mathematical calculations) originated from the worksheets used by accountants.
- A worksheet refers to one sheet of numbers, labels, formulas.
- A workbook refers to a book of sheets.

## Usefulness of Spreadsheets – What do people use it for ?

*A spreadsheet has many uses for business and home, for any individual with a lot of numbers that needs to be analysed, manipulated. Examples of uses for spreadsheets include:*

- Preparing budgets for companies and individuals
- Planning for changes in the future by using formulas and creating potential scenario changes.
- A simple database for information such as employee/client details, payroll data, addresses and telephone numbers
- A simple database for stock inventory at a store.
- Generating and displaying charts to simplify the interpretation of numeric data.

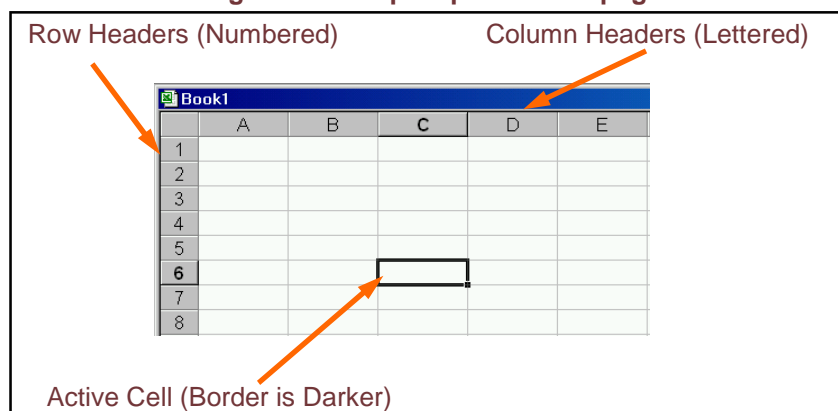
## Spreadsheet Page

The spreadsheet page is divided into rows and columns. The rows are labeled down the left with numbers, and the columns are labeled along the top with letters.

## Spreadsheet Cell

Each rectangle created at the intersection of the column header and row header is called a cell. By using unique headers for each column and each row a cell can be uniquely identified, pointed to.

Diagram: A sample spreadsheet page



- A Cell is the intersection of a row and a column
- Each row and column creates a unique cell.
- Each cell is displayed on the screen as a rectangular shape which can store text (label), value, or a formula.

The value of a cell may be calculated from a formula involving other cells; for example, C5 may be the sum of A5 and B5. If the data entered in A5 changes, then C5 would be automatically

recalculated by the program. This feature makes it possible to use a spreadsheet to project the results of a change in one or more factors.

## Active Cell

The active cell, also called the 'current' or 'selected' cell, is the cell (intersection of a particular row and column) that is the current focus of activity. Graphically, as in the above picture, the border for the active cell (the intersection of column B and row 4 in our illustration) is darker than the surrounding cells. The active cell receives the actions of the user, such as data entry, editing, formatting.

## Cell Referencing, Cell Addressing

*A cell reference, or cell address, is the unique co-ordinate system used to identify a specific cell. For example, by using the column header and row header combination we can uniquely identify (point to) A5, H8, and E2 without mistaking the location for another cell.*

- A5 refers (or points) to Column A row 5
- H8 refers (or points) to Column H row 8
- E2 refers to Column E row 2

*There are two types of cell referencing supported by most spreadsheets: Absolute Reference and Relative Reference. References between cells may be designated as absolute or relative; an absolute reference refers to a specific cell, and a relative reference describes a cell in its relation to the current cell (as two rows above, two columns to the left, etc.).*

		A	B	C
1	1			
2	2			
3	3			
4	4			
5	5		=A1	
6	6			
7	7			
8	8			
9	9			
10	10			
11				
12				

### Relative Reference.

*A relative reference allows the spreadsheet to adjust (move the reference) if the user decides to rearrange the location of cells in his or her spreadsheet.*

**Reference Location:** B5

**Moved To:** C7

**Formula Reference:** A1

**New Reference in Cell C7:** A1 ⇒ B3

In the above diagram, cell B5 has a reference in it to Row A, Column 1

When we move (by using Copy/Paste) the contents of cell B5 to cell C7, we have moved the contents down 2 rows, and to the right one row.

- row 5 has changed to row 7 : a change of two rows down
- column B has changed to column C : a change of 1 column to the right.

The spreadsheet makes the exact same change to the reference.

- reference to row 1 changes two rows down : it now refers to row 3. [ 1  $\Rightarrow$  3]
- reference to column A changes one column to the right : it now refers to column B.  
[ A  $\Rightarrow$  B]
- A1  $\Rightarrow$  B3

Microsoft Excel uses relative referencing by default.

### **Absolute Reference.**

An absolute reference forces the cell referencing to always point to where it was originally set even if the user rearranges the cells. When copied, or moved from one cell to another, the cell reference does not change, as in the relative reference.

To distinguish the difference between an Absolute Reference and a Relative reference, the key symbol “\$” dollar sign is used.

- \$H\$4 – refers to Column H absolute, and row 4 absolutely.
- \$A3 – refers to Column A absolutely, and row 3 relatively.
- G\$15 – refers to Column G relatively, and row 15 absolutely.

For the previous diagram, the following differences would occur with Absolute referencing.

<b>Reference Location:</b>	B5
<b>Moved To:</b>	C7
<b>Formula Reference:</b>	\$A\$1
<b>New Reference in Cell C7:</b>	\$A\$1 $\Rightarrow$ \$A\$1

After moving the cell, \$A refers to column A absolutely and does not change. \$1 refers to row one absolute, and does not change. \$A\$1  $\Rightarrow$  \$A\$1

<b>Reference Location:</b>	B5
<b>Moved To:</b>	C7
<b>Formula Reference:</b>	\$A1
<b>New Reference in Cell C7:</b>	\$A1 $\Rightarrow$ \$A3

After moving the cell, \$A refers to column A absolutely and does not change. 1 refers to row one relatively, and does change by two rows to row 3. \$A1  $\Rightarrow$  \$A3

<b>Reference Location:</b>	B5
<b>Moved To:</b>	C7
<b>Formula Reference:</b>	A\$1
<b>New Reference in Cell C7:</b>	A\$1 $\Rightarrow$ B\$1

After moving the cell, A refers to column A relatively and does change one column to the right, A  $\Rightarrow$  B. \$1 refers to row one absolutely and does not change \$1  $\Rightarrow$  \$1. A\$1  $\Rightarrow$  B\$1

## Cell Range

The Cell Range refers to more than one cell as a group. A cell range usually refers to a single block of cells in a large rectangle.

If a block of cells is 'highlighted/selected' beginning at the top-left with cell B10 and going down to the bottom-right at F15, then the range is B10 –to– F15, or written in the format B10:F15

- top-left cell (colon) bottom-right cell.

## Valid Data for a Spreadsheet Cell

A spreadsheet cell can contain three types of data: Value, Formula, Text

### Value

A value is a number. Anything that can be counted, or have a numbered amount is a value. Numbers can be entered as percentages, dollar values, decimal, and integer values.

### Formula

A formula is any valid mathematical equation that uses numbers or other cells together with the arithmetic operators and spreadsheet functions.

- The valid operators are the mathematical addition (+), subtraction (-), division (/), and multiplication (\*).
- The valid operands (things to be operated on) are numbers or references to cells which the operator can work on.

Note: Spreadsheet formulas follow the standard arithmetic order of operation rules summarised by the term: BEDMAS

<i>Level 1</i>	<b>B</b> rackets
<i>Level 2</i>	<b>E</b> xponentiation
<i>Level 3</i>	<b>D</b> ivision and <b>M</b> ultiplication
<i>Level 4</i>	<b>A</b> ddition and <b>S</b> ubtraction

- Higher levels are calculated before the levels below it. Level 1 (Brackets) have precedence, or are calculated before Level 2, 3, and 4. Likewise, Level 2 has higher priority and is calculated before Level 3, and 4.
- Operations in the same level (for example Level 3, Multiplication and Division) can be performed in any order.  $2 * 3 / 2$  provides the same answer whether the multiplication is calculated first than the division, or the division is calculated first before the multiplication.

Excel Functions (built-in formulas such as SUM to add cells together) are calculated after the operands have been evaluated, and before other calculations in the formula.

### Text

Text or Labels are letters (characters) that are placed in cells. They are generally used to help describe (label) the numbers and formulas.

## Sources and References:

Adapted from notes originated and supplied by Tonga Siliva

<http://www.tongatapu.net.to/compstud/> - Computer Studies Course Notes

<http://www.tongatapu.net.to> - **Tonga on the 'NET**

**Tonga on the 'NET** is available on all networked computers at Queen Salote College and participating schools.