# TEXT Functions

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# Introduction

Whilst Excel is famous for its numeric calculations and presentation abilities it can also do some really cool things with text.

This webinar will take you through all the text functions you need to know and how to use them effectively.

Excel has a built-in feature that can speed up splitting up text.

We will examine three common things done with text:

1. Split it
2. Join it
3. Tweak it

We will finish with a few ways to use the functions together to solve some common issues.

**Quotation Marks**

When using text in a formula you need to enclose the text entries in quotation marks.

**Blanks**

To refer to a blank cell in Excel you need to use two consecutive quotation marks

**""**

**Spaces**

When working with text, always remember that a space is a text character. You need to take spaces into consideration when working with text in terms of splitting and joining text. To refer to a space you use a space between two quotation marks.

**" "**

**Text Values**

Text functions returns text entries. Sometimes you will need to convert a text number into a real number. You will learn an easy technique to achieve that.

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# Splitting Text

When data comes out of other systems it may not be in a form you want or can use for the output you require. The text features and functions allow you to modify the data so that is usable.

A common requirement is to split the first and last name.

| | A |
|---|---|
| 1 | **Full Name** |
| 2 | John Smith |
| 3 | Sally Tan |
| 4 | Sue Jones |
| 5 | Shirley Ong |
| 6 | Chris Taylor |

## Text To Columns

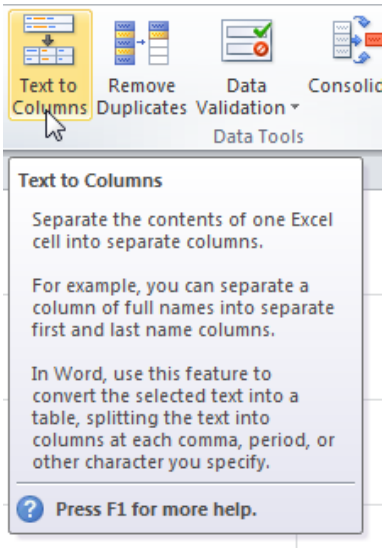
If your data has some structure or uses specific characters to separate the text strings then Text to Columns may provide the quick solution you need to split up your data. We will use a small range but it can work on thousands of rows.

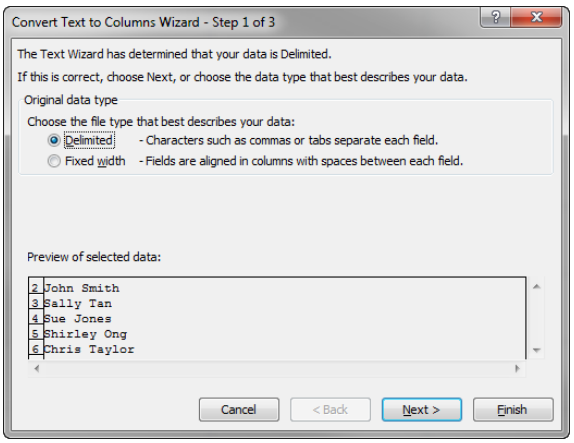
**WARNING:** Make sure there are no entries on the right of the data you want to split.

**PRACTICE:**

1. In this example we have a first and last name in column A.
2. To use Text to Columns you need to first select the range to work with. In our case select A2:A6.
3. Click the Data ribbon tab and click the Text to Columns icon.
4. The first step in a three step Wizard opens.
5. In most cases you will use the Delimited option which assumes a character is used to split up the data.

   In our case it is a space character. If your data has fixed widths you can use the Fixed width options.
6. Click the Next button.



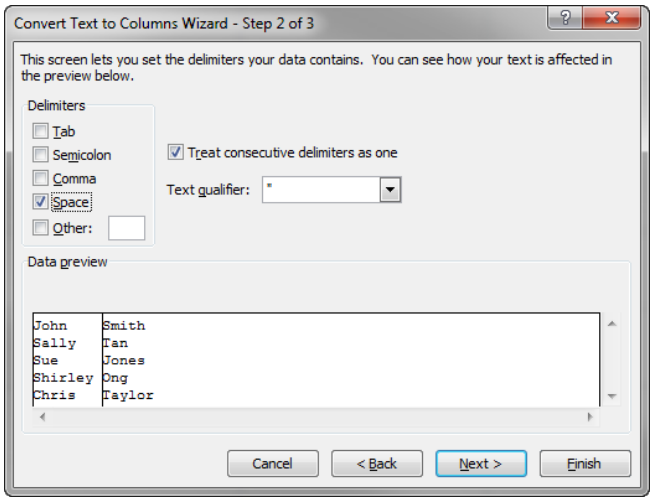



7. In Step 2 change the option to Space and you will see the data change in the bottom of the dialog to show the split.

   You can click the Finish button at this stage if you have no numbers involved.

   If you have numbers like bank account or mobile phone numbers you will want to use the third step in the Wizard.

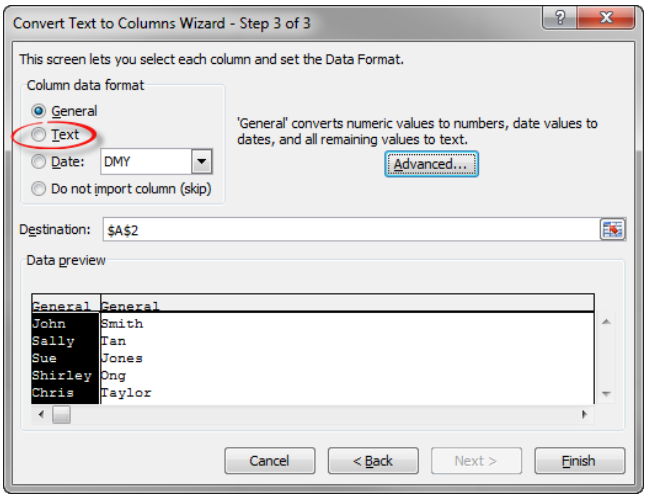
   Click the Next button.




8. In the third step of the Wizard you can select a column and apply a format to them.

   Applying a Text format to a column of bank account or mobile numbers will retain any leading zeroes. If you don't use the Text option the leading zeroes will be lost.

   Click Finish button to see the result.




| | A | B |
|---|---|---|
| 1 | **Full Name** | |
| 2 | John | Smith |
| 3 | Sally | Tan |
| 4 | Sue | Jones |
| 5 | Shirley | Ong |
| 6 | Chris | Taylor |

# Text Functions

## LEN Function

One of the simplest of the text functions is the LEN function. It is short for length and returns how many characters are in the cell's value.

=LEN(Cell_ Reference)

**Example**

=LEN(A2)

Will return how many characters (including spaces) are in the value in A2.

**TIP:**

Don't forget spaces are characters too. A space counts as a character. They need to be considered when handling text. Some systems download data into Excel that contains leading or trailing spaces. See TRIM function below

## TRIM Function

Another simple to use function that performs a useful service. It removes all leading and trailing space characters whilst leaving spaces within the text alone. Leading and trailing spaces in data are a common problem for VLOOKUP, SUMIF and SUMIFS functions.

=TRIM(Cell_ Reference)

**Example**

=TRIM(A2)

## Extracting Text via Formulas

There are three functions that can extract text from cells. We can extract from the left, the right and the middle of the cell.

## LEFT and RIGHT Functions

These two functions work the same way, but from either end of the text string. They extract a specified number of characters from a text string from either the left or the right of the text string.

=LEFT(Text, Number_of_Characters)

=RIGHT(Text, Number_of_Characters)

**Text** is typically a cell reference.

**Number_of_Characters** (optional) can by typed in (hard coded) or a cell reference or a function or formula. If omitted, 1 is used.

**Examples**

If A1 contains the text John Smith

Then

=LEFT(A1,4) will display John

=RIGHT(A1,4) will display mith

If you omit the Number_of_Characters then it will default to the first (LEFT) or last (RIGHT) characters.

## MID Function

The MID function allows you to extract text from the middle of a text string.

=MID(Text, Start_Character_Number, Number of Characters)

**Text** is typically a cell reference.

**Start_Character_Number** is the character position where the extraction will start from, this value can be hard-keyed; a cell link or a formula. This character position is the first character of the string that is returned.

**Number of Characters** is how many characters are to be extracted. This can be hard-keyed; a cell link or a formula.

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**Examples**

If A1 contains the text John Smith

Then

=MID(A1,6,2) will display Sm

=MID(A1,2,5) will display ohn S

**PRACTICE:**

1. In the MID sheet we can see how MID works to extract text.

2. Cell B2 has the following formula keyed in and copied down

   =MID(A2,4,3)

3. Note cell B5 even though it is displaying a number it is left aligned, meaning it is text. To convert this to a number you can modify as follows.

   =MID(A5,4,3)*1

   This will display an error if the text cannot be converted into a number.

4. The formula in cell F2 is

   =MID(A2,D2,E2)

   You can change the values in columns D and E to modify the text extracted in column F. Using a cell reference to define how many characters to extract is useful if the data being extracted is a fixed length eg bank account BSB or a product code and should these ever be lengthened or shortened referencing a cell reference is a very quick method of overcoming the need to re-write the formula in various spreadsheets.

5. Note the result in cell F5. You may think an error message would be generated. The LEFT, RIGHT and MID functions when used by themselves rarely display errors.

The MID, LEFT and RIGHT functions are often used with the SEARCH function to provide a flexible extraction technique.

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## SEARCH Function

The SEARCH function looks for one text string within another text string and returns the character position of the first letter of the text being searched for. If the text being searched for is not in the text string the function returns a #VALUE! error.

The SEARCH function is not case sensitive. If you need to perform a case sensitive search use the FIND function, which has an identical syntax to the SEARCH function

=SEARCH(Find_Text,Within_Text,Start_Number)

**Find_Text** is the text string to search for. It can be keyed-in; a cell reference or a formula. It can be a single character or multiple characters. You must enclose all text within quotation marks.

**Within_Text** is the string to search in

**Start_Number** (optional) and determines the character position to start searching from

**Examples**

=SEARCH("a","cat") will display 2

=SEARCH("cat","top cat") will display 5

**PRACTICE:**

1. Open the SEARCH sheet. There are some names that we want to separate into First Name and Last Name.

2. The solutions will involves the LEFT, RIGHT, LEN and SEARCH functions

3. In cell B2 enter the following formula

   =LEFT(A2,SEARCH(" ",A2)-1)

   To extract the first name, which is at the start of this text string, we use the SEARCH function to identify where the space is. We subtract 1 from the SEARCH result because the number returned will be one more character than we need a it includes the space. Deducting one leaves us with the name only, no space.

   The formula can be copied down, note the error in the last cell. There is no space in the name.

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4. In cell C2 enter the following formula

   =RIGHT(A2,LEN(A2)-SEARCH(" ",A2))

   To extract the last name from the end of the string we need the number of characters of the last name. This is calculated by subtracting the SEARCH result for the space from the length of the string. This calculates how many characters are after the space.

   Again this will display an error is there is no space in the name.

## Handling Errors

As we have seen the SEARCH function can display errors. As a general rule you should avoid displaying errors. Your formulas need to handle errors in a manner that doesn't cause other errors

Excel 2007 added a function that simplifies handling errors. The IFERROR function does not work in previous versions.

## IFERROR Function

The IFERROR function has a very simple layout.

# =IFERROR(Formula, Value_If_Error)

**Formula** – any formula that could return an error

**Value_If_Error** – the value, formula or text to display if an error is encountered.

**Example**

# =IFERROR(A1/B2,0)

will display a zero if B2 is zero and avoids the #DIV/0! Error.

**PRACTICE:**

1. Let's fix the first name and last name formula in SEARCH sheet to handle a single word name.

2. Amend the formula in B2 from

   =LEFT(A2,SEARCH(" ",A2)-1)

   to

   =IFERROR(LEFT(A2,SEARCH(" ",A2)-1),A2)

   The highlighted section has been added.
   This will treat a name without a space as a first name

3. Amend the formula in C2 to

   =IFERROR(RIGHT(A2,LEN(A2)-SEARCH(" ",A2)),"")

   The displays a blank cell if there is no space in the name

4. Copy the formulas down to test.

# Joining Text

Creating headings and even whole sentences is possible with one or two additional functions and a certain symbol.

The & symbol (its above the number 7 on the keyboard) will join text together. There is a function called CONCATENATE that does it too but its easier to use the &.

This can be used to automate journal narrations, report comments and headings.

## Automating Headings and Text

Report headings often contain dates and some reports have narrations describing results. It is possible to automate some of these text entries. We have seen the text functions that Excel has. It has one other function that is useful for headings and narrations. The TEXT function allows you to format dates and dollar amounts.

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## TEXT Function

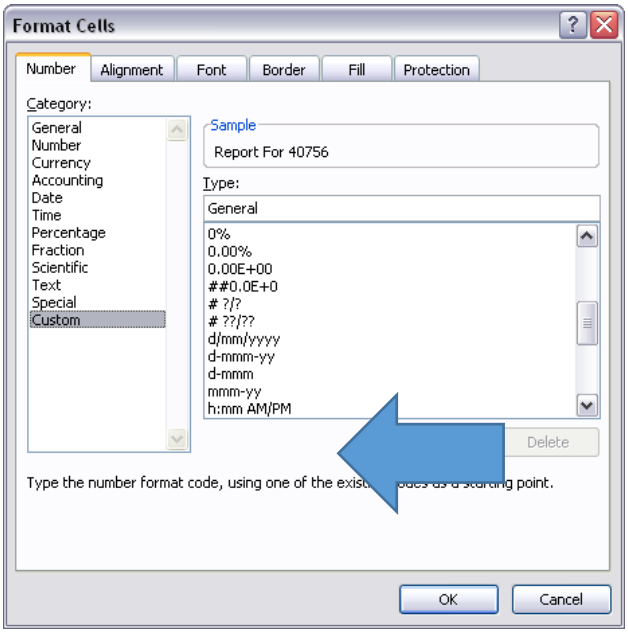
TEXT is very flexible as you can apply many different formats. When you use the & symbol to join text together you have to use the TEXT format dates and numbers.

Excel stores dates as numbers. When you join a date with no formatting the number is displayed. See cell C4 in the Joining sheet.

=TEXT(Value,Format)

**Value** – is usually a cell reference

**Format** - must be enclosed in quotation marks. The Formats are the same as those found in the Custom section of the Number tab in the Format Cells dialog.




**Example**
Cell A1 contains 1/1/2011

=TEXT(A1,"dd mmm yy") will display 01 Jan 11

**PRACTICE:**

1. In the Joining sheet column C cell C2 has a simple formula that has been copied down.

   =A2&" "&B2

2. Note the issues in cells C3 and C4 where you need to apply formats the value and the date.

3. The TEXT function is used in the cases. The formulas are as follows D3 is

   =A3&" "&TEXT(B3,"$#,###")

   Cell D4 has

   =A4&" "&TEXT(B4,"mmmm yy")

# Tweaking Text

## Case

If you need to modify the case of the text eg convert to uppercase, lowercase or proper case you can use the following three functions UPPER, LOWER and PROPER. All functions take a cell reference and convert them to their specific case.

The UPPER sheet has examples.

You can use these functions to enclose other formulas to convert the case.

## SUBSTITUTE Function

You can use the SUBSTITUTE function as a formula-based alternative to using the Find and Replace option. When converting codes between systems sometimes you need to remove characters or change characters to enable matching.

=SUBSTITUTE(Text,Old_Text,New_Text,Instance)

**Text** - the text to change, it is usually a cell reference.

**Old_Text** - the text to find, enclose in quotation marks if keyed in.

**New_Text** - the replacement text, enclose in quotation marks if keyed in.

**Instance** - (Optional) - entering 2 would change only the second instance. When omitted, all instances are changed.

**Examples**

=SUBSTITUTE(A2,"-","")

Will remove the minus sign from the code in cell A2

=SUBSTITUTE(A2,"-","/")

Will replace the minus sign with the forward slash.

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# Useful Text Solutions

## Extracting the Sheet Name

A common request is to extract the current sheet name. Sheet names have to be unique. You can name a sheet an account number or a department name. Then you can use a formula to automatically change the report based on the sheet name.

**Note:** the example below uses a stand-alone file, not the companion Excel file for this session. We will build the formula in the Test sheet of the companion file.

There are two ways to extract the formula.

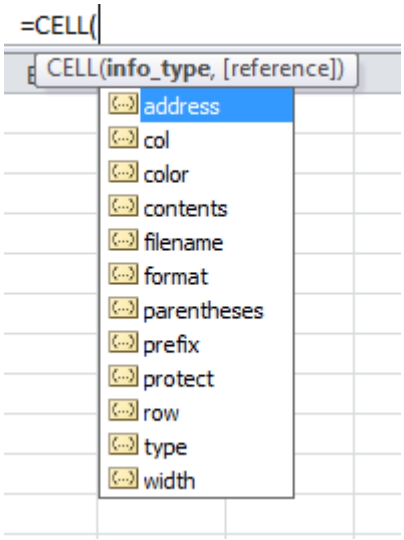
## Single Formula

The single formula is quite long, but is self-contained and can be used anywhere. It uses the CELL function to extract the sheet name.

## CELL Function

The CELL function returns information about a cell. **Note:** the CELL function will return a blank cell if the file has not been saved.

### =CELL(Information_Type,Reference)




**Information_Type** - see image on right for the types of information that can be displayed. The “filename” is the most common type used.

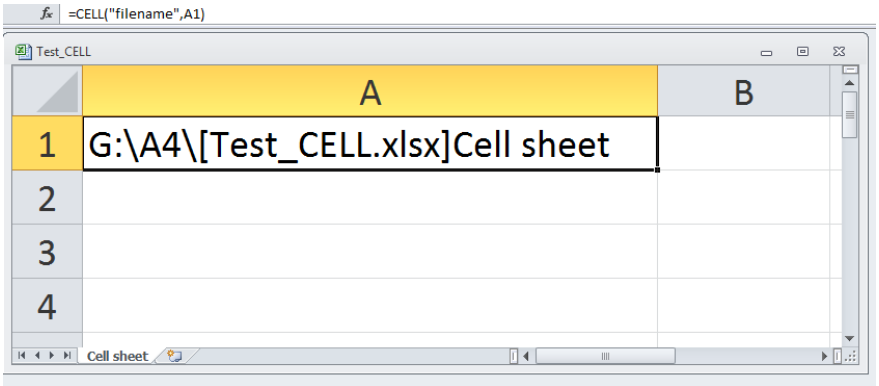
**Reference - (Optional)** - I recommend always using a cell reference as I have seen some unusual results when this is omitted.

**Example**

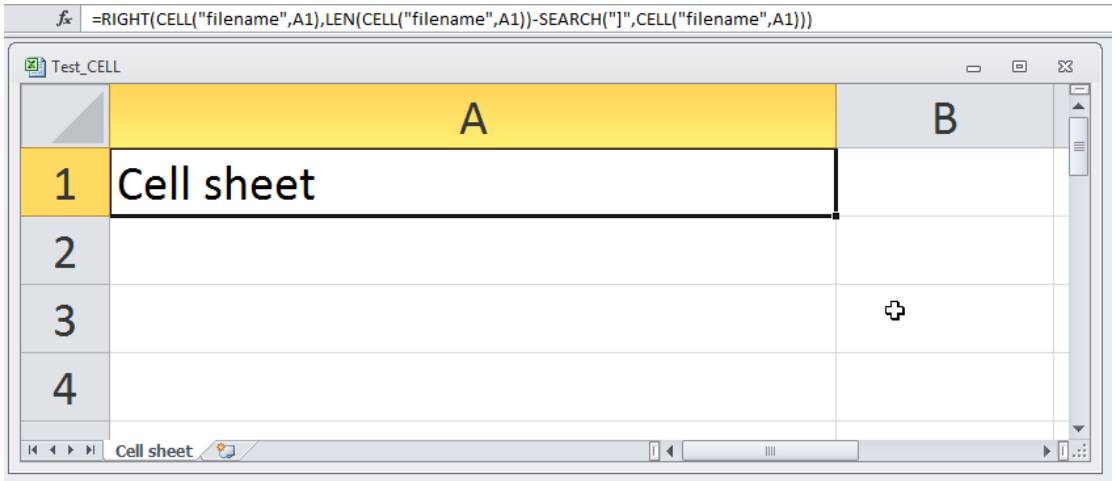
### =CELL("filename",A1)

This formula is in cell A1 but it doesn’t cause a circular reference.

The "filename" option displays the full path, full filename and the sheet name.



## Sheet Name Formula



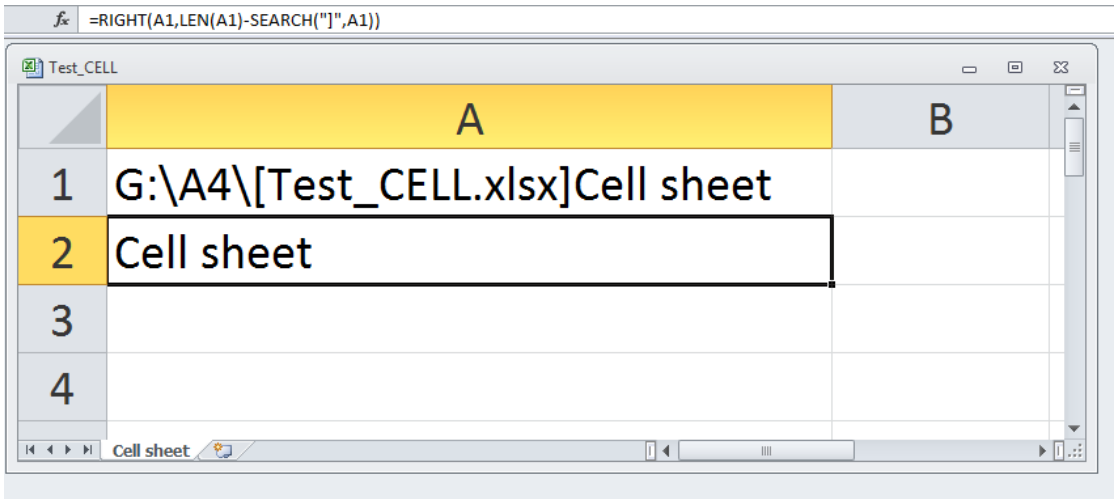

The formula in cell A1 is

=RIGHT(CELL("filename",A1),LEN(CELL("filename",A1))-SEARCH("]",CELL("filename",A1)))

**Note:** the CELL function is repeated three times. An alternative, shorter formula involves having the CELL function in cell A1 and then refer to A1 three times, rather than the CELL function.

If cell A1 contains the CELL function then the much shorter formula is

# =RIGHT(A1,LEN(A1)-SEARCH("]",A1))



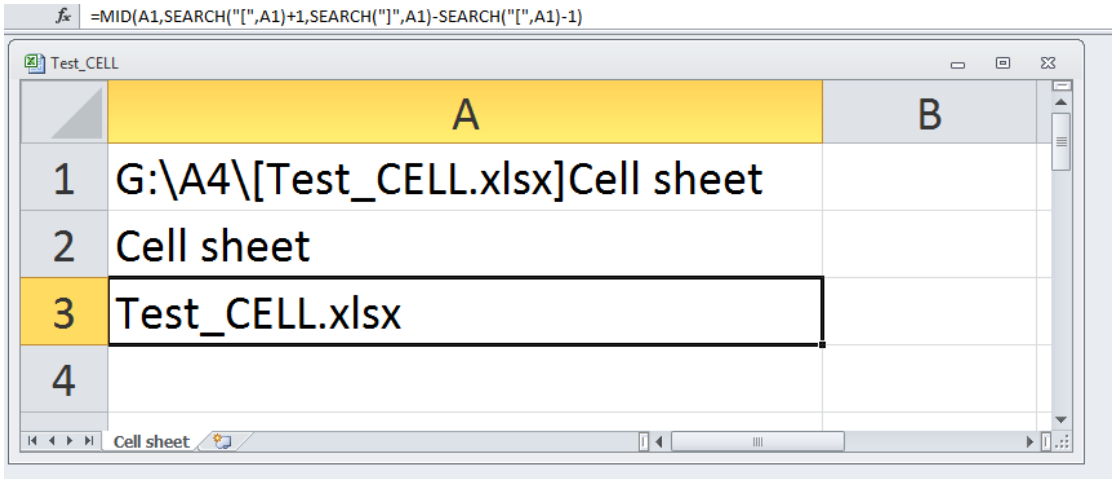

This is not a self-contained formula as it relies on cell A1 having the CELL function in it. To use it in other cells you may way want to fix the A1 reference as follows.

## =RIGHT($A$1,LEN($A$1)-SEARCH("]",$A$1))

## Extracting the File Name

To extract just the file name you could use the formula below.

=MID(A1,SEARCH("[",A1)+1,SEARCH("]",A1)-SEARCH("[",A1)-1)




Again this is not a self-contained formula as it relies on cell A1 having the CELL function.