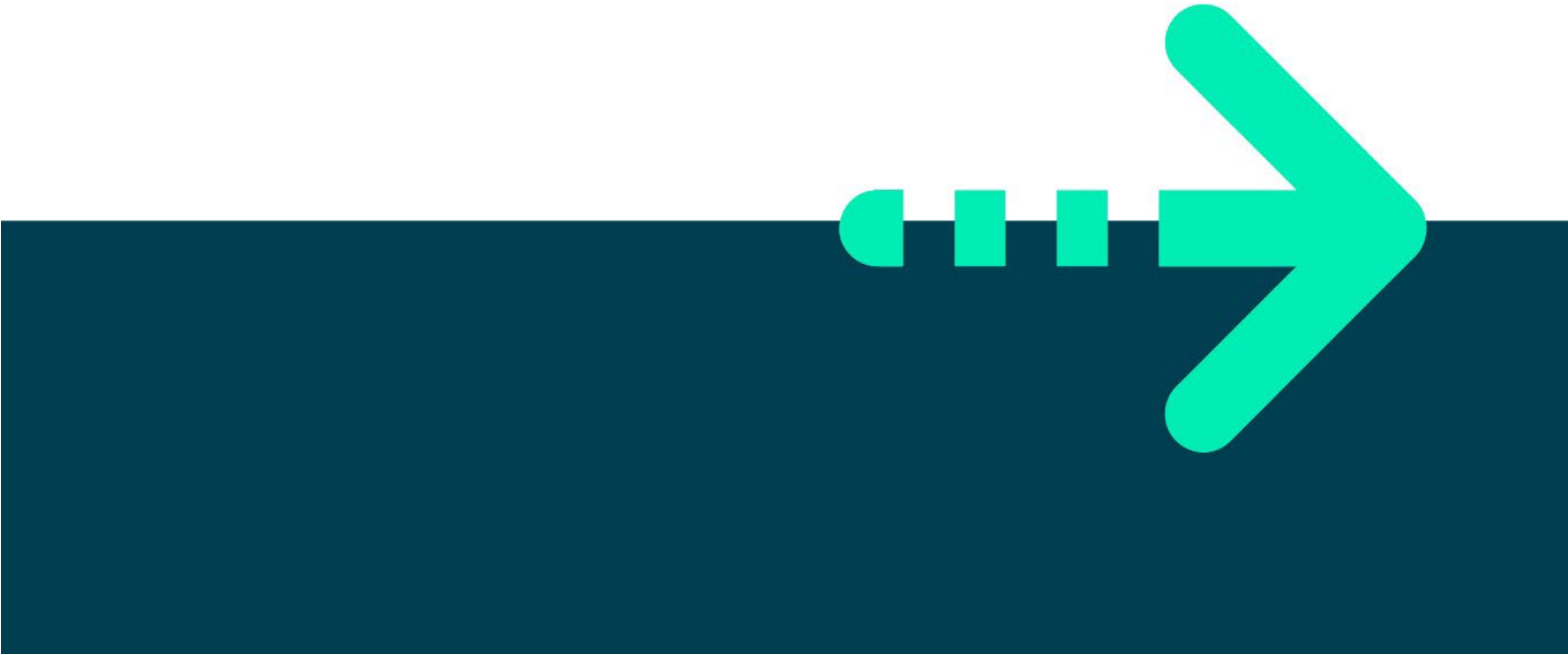
Activity 4 – Excel auditing tools

Learner guide



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How to Use This Workbook

Activity

Alongside this icon you'll find details of the group/individual activity or a point for everyone to discuss.

Useful Tool

This icon indicates a technique that will help you put what you learn into practice.

Important Idea or Concept

Generally, this icon is used to draw your attention to ideas that you need to understand by this point in the course. Let your trainer know if you do not understand or see the relevance of this idea or concept.

Helpful Hint

This icon guides you to tips or hints that will help you avoid the standard pitfalls that await the unwary practitioner or to show you how you might increase your effectiveness or efficiency in practising what you have learnt.

Key Point

This icon is used to indicate something that practitioners in this field should know. It's likely to be one of the major things to remember from the course, so check you do understand these key points.

Reference Material

When we have only touched briefly on a topic this icon highlights where to look for additional information on the subject. It may also be used to draw your attention to International or National Standards or Web addresses that have interesting collections of information.

Definition

Where a word with a very specific definition (or one that could be described as jargon) is introduced this will highlight that a definition is provided. (These words will also be found in the Glossary at the back of the workbook.)

Warning

This icon is used to point out important information that may affect you and your use of the product or service in question.

The auditing tools

This activity covers Excel's formula auditing tools and commands. You will learn how to trace formulas and errors and how to easily view formulas. The activity also covers the Watch Window.

By the end of this activity, you will be able to:

- trace formula precedents and dependents.
- trace and resolve common errors.
- view formulas with commands and functions.
- use the Watch Window .

Tracing precedents and dependents

Excel's collection of auditing tools makes it easier to examine issues within a workbook. They are usually used to help resolve problems within a file but are also extremely useful in gaining an understanding of inherited workbooks.

When tracing, Excel uses two pieces of terminology:

- **Precedents**: cells that are referred to by a formula in another cell. For example, if cell D10 contains the formula **=B5**, then cell B5 is a precedent to cell D10.
- **Dependents:** these cells contain formulas that refer to other cells. For example, if cell D10 contains the formula **=B5**, cell D10 is a dependent of cell B

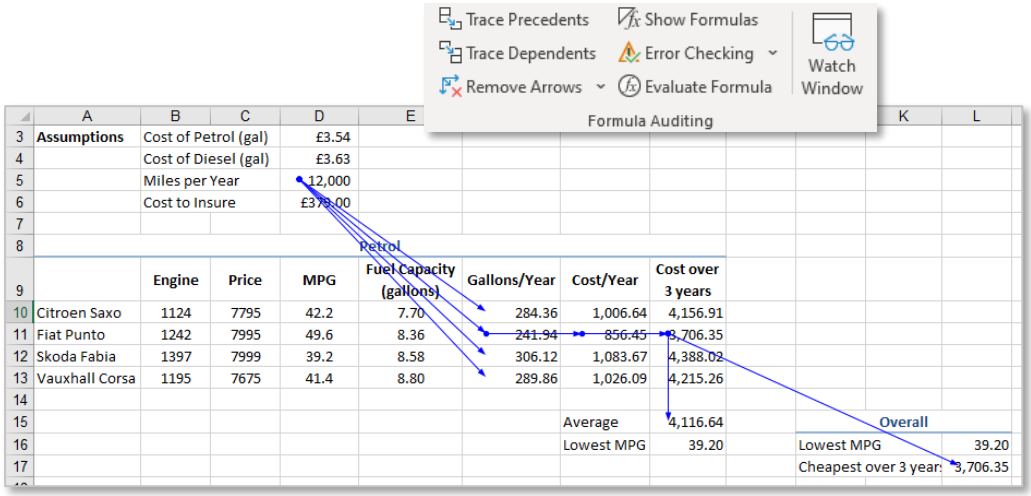

Figure 1: The Auditing tools.

The above screenshot shows the auditing tools (located on the Formulas tab of the Ribbon) and a worksheet with tracing displayed.

To trace precedents or dependents:

1. Select the cell to trace:
   - If tracing precedents, the selected cell must contain a formula.
   - If tracing dependents, the selected cell can contain a formula or static data.
2. Click **Formulas > Trace Precedents** or **Trace Dependents**, as required – Excel will draw the relevant tracing arrows (usually displayed in blue).

Useful Tool

Each time the relevant tracing button is clicked, a further level of precedence or dependence is highlighted until all are identified (the computer will usually beep).

Useful Tool

Double-clicking a tracing arrow will select the cell(s) being traced. If they are on a different worksheet or workbook, the 'Go To' dialog box will be displayed.

To remove tracing arrows:

- Click **Formulas > Remove Arrows** to remove all tracing arrows, or...
- Click **Formulas > Remove Arrows > Remove...** to remove individual levels of traced precedent or dependent arrows.

Guided activity:

Tracing cells

In this activity you will trace precedents in an existing workbook.

1. Open the **AUDITING.XLSX** workbook and the 'Sales' worksheet.
2. Select cell F2 and click **Formulas > Trace Precedents** – notice that the formula is using the wrong column of data.
3. Edit the calculation in cell E2 to read **=AVERAGE(I8:I32).**

Cell F2 will now display a #VALUE! error, rather than the value that was previously displayed – this will be resolved in the next activity

4. Save the workbook and keep it open.

Tracing errors

Excel provides three tools specifically aimed at locating and resolving errors in a workbook:

- **Trace Error:** indicates cells that are referenced by a formula that has an error.
- **Error Checking:** searches the worksheet for error messages and displays a dialog box to help resolve the problem.
- **Circular References:** lists any cells containing a circular reference.

To locate the originating cell for an error:

1. Select any cell containing an error message and either:
2. Click **Formulas > Error Checking > Trace Error**, or…
3. Click the **SmartTag** on the cell (the exclamation mark icon) **> Trace Error.**

Key point

Blue arrows point to cells referenced by the formula; red arrows point to cells where the error is carried forward.

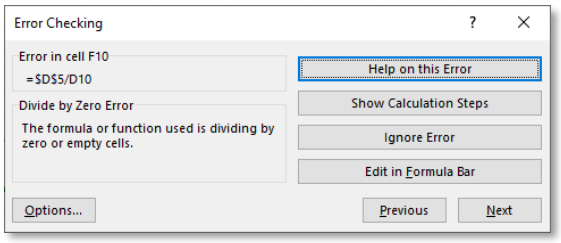

Figure 2: The 'Error Checking' dialog box.

To correct errors for an entire worksheet (like using Microsoft Word's spelling and grammar checking tool):

1. Click **Formulas > Error Checking** – Excel will navigate to the first error and display the 'Error Checking' dialog box which will detail the error.
2. Click the appropriate button on the right-hand side of the dialog box to correct the error.
3. Click **Next** to move onto the next error.

Guided activity:

Finding and resolving errors

In this activity, you will resolve the error previously encountered:

1. Ensure the **AUDITING.XLSX** workbook is still open from the previous activity.
2. Navigate to cell F2, and click **Formulas > Error Checking.**

The description of the error states: 'A value used in the formula is of the wrong data type'.

5. Click the **Trace Error** button – it traces the error to cell I8.
6. Close the 'Error Checking' dialog box.

The blue precedent arrows are indicating the cells that Excel is trying to multiply containing text (F7, G7 and H7). This is because the calculation is pointing to row 7, instead of row 8.

7. Correct the formula to read **=(F8*G8)*(100%-H8)**
8. Copy the calculation down to cell I32.
9. Save the workbook and keep it open for use in the next activity.

Viewing formulas

When working with formulas, it can be useful to view the formulas rather than their results.

Viewing worksheet formulas

Normally, it is only possible to view one formula at a time. However, Excel's auditing tools allow all formulas on a worksheet to quickly be displayed.

	A	B	C	D	E	F	G	H
3	**Assumptions**	Cost of Petrol (gal)		3.54				
4		Cost of Diesel (gal)		3.63				
5		Miles per Year		12000				
6		Cost to Insure		379				
7								
8				Petrol				
9		**Engine**	**Price**	**MPG**	**Fuel Capacity (gallons)**	**Gallons/Year**	**Cost/Year**	**Cost over 3 years**
10	Citroen Saxo	1124	7795		7.7	=$D$5/D10	=F10*$D$3	=(G10+$D$6)*3
11	Fiat Punto	1242	7995	49.6	8.36	=$D$5/D11	=F11*$D$3	=(G11+$D$6)*3
12	Skoda Fabia	1397	7999	39.2	8.58	=$D$5/D12	=F12*$D$3	=(G12+$D$6)*3
13	Vauxhall Corsa	1195	7675	41.4	8.8	=$D$5/D13	=F13*$D$3	=(G13+$D$6)*3
14								
15							Average	=AVERAGE(H10:H13)
16							Lowest MPG	=MIN(D10:D13)

Figure 3: Viewing worksheet formulas.

To show or hide all formulas on the worksheet:

1. Navigate to the worksheet whose formulas are to be displayed.
2. Click **Formulas > Show Formulas.**

Helpful hint

Press **Ctrl** ` (located just below Esc on a PC keyboard) to show or hide worksheet formulas.

Useful tool

Printing a worksheet with its formulas displayed will print the formulas rather than their results.

Using the FORMULATEXT function

Definition

Introduced in Excel 2013, the FORMULATEXT function displays the formula used in another cell. This can be useful when troubleshooting and auditing worksheets.

It also provides an added benefit of being able to view a formula and its result at the same time. The syntax of the FORMULATEXT function is:

Syntax

=FORMULATEXT(cell reference)

The Watch Window

Working with larger worksheets, workbooks, or even multiple files can prove particularly difficult, often for no other reason than the size of them – changes may be being made to a cell which affects parts that cannot be seen (as they are too far away), and this can make troubleshooting trickier.

Key point

Excel can only watch cells in workbooks that are open – closing a file will remove its watches from the Window until the workbook is reopened.

The **Watch Window** can list formulas and their results of multiple cells simultaneously, even when multiple worksheets or workbooks are in use.

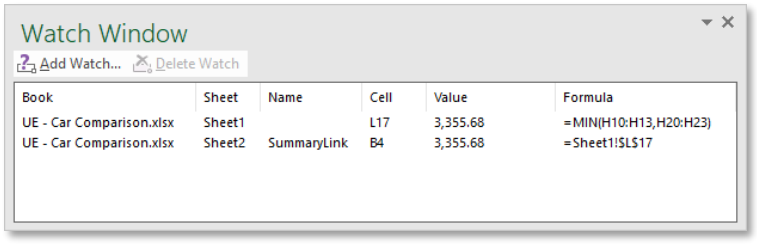

Figure 4: The 'Watch Window'.

When the Watch Window is open, any changes made to the worksheet that affect cells being watched will be reflected in the Watch Window.

If necessary, the Watch Window can be moved around the screen (or even to a second monitor). Dragging the Watch Window to the edge of the Excel window will 'dock' it at that edge.

To watch cells from any open workbook:

1. Click **Formulas > Watch Window** to open the window.
2. Click **Add Watch...**
3. Select the cell(s) to be watched, and click **Add.**

Helpful hint

Closing the Watch Window does not stop Excel from watching cells. If the workbook is saved, the watches are also saved ready for next time the Window is opened.

Guided activity:

Using the Watch Window

In this activity, you will use the Watch Window to monitor changes to data in an existing workbook.

1. Ensure that the **AUDITING.XLSX** workbook is still open from the previous activity.
2. Navigate to the 'Sales' worksheet, cell C8 – notice this contains a VLOOKUP formula that is not working correctly.
3. Click **Formulas > Watch Window.**
4. Click **Add Watch...**, ensuring that **=Sales!$C$8** is noted, and click **Add.**
5. Navigate to the 'Tables' worksheet.
6. Click the dropdown button in the Name Box – notice that this is empty.

The range name of 'Customers' used on the first worksheet has not been created properly, hence the error on the previous sheet.

7. Select cells B3:C13, and name it as **Customers.**
8. Check the values section of the Watch Window – notice the watched cell (C8) is now producing a #REF! error.

As the formula is specifying a column index argument of '3', and the Customers range name only has two columns, the formula does not work.

9. In the Watch Window, double-click the watch for cell C8 to navigate to it within the workbook.
10. Correct the formula to read **=VLOOKUP(B8,Customers,2,FALSE)**
11. Copy the corrected formula down to cell C32, and close the Watch Window.
12. Save the workbook and keep it open for use in the next activity.