

Excel for Archivists: Introduction to using formulas in Excel



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(read these two pages before joining the meeting)

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The small print

Prerequisites

No prior learning activities are required.

You should read pages 3 and 4 of this course guide before joining the training

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About the trainer

Gillian Sheldrick has worked as an archivist for over thirty years, and has a particular interest in cataloguing, as well as being a long-standing Excel enthusiast. She was Senior Archivist at Hertfordshire Archives and Local Studies, where she was responsible for the 'behind the scenes' aspects of the service, including the cataloguing programme, and then Cataloguing Manager for English Heritage where she was responsible for the new archive cataloguing system (built in-house) and for making the catalogues available on line. She now works as a freelance cataloguer and carries out Excel training and consultancy. In 2019 she qualified as one of the first Fellows of the Archives and Records Association (FARA).

Her interest in using IT to assist with cataloguing large collections dates back to the 1980s when the Archives service was considering buying a computer (by no means an obvious investment then). She was asked to investigate whether any use might be found for it and began experimenting with using simple databases. Since then she has moved on to Excel, which is much more powerful than any of those early databases.

Gillian developed the Excel for Archivists workshops in 2014; to date she has delivered 51 workshops, including 25 for the University of Oxford IT Learning Centre.

Revision history

| Version | Date | Author | Comments |
|---------|-------------|-------------------|--------------------------|
| 0.1 | 29 Oct 2020 | Gillian Sheldrick | Draft |
| 1 | 30 Oct 2020 | | Final |
| 2 | 21 Dec 2020 | Gillian Sheldrick | Corrections and addition |

About this training session

What you will learn

In this online training session, *Excel for Archivists: Introduction to using Formulas in Excel*, you will learn to

- Understand the concept of functions and formulas, especially in the context of using and improving archival data in Excel
- Understand the concepts of relative and absolute cell references and conditional formulas
- Create and use simple formulas acting on textual data in Excel

Who will benefit

This training session will be of most use to those who wish to extend their Excel skills after using Excel at a fairly basic level, perhaps for data entry.

This training is aimed primarily at archivists and others working in archival institutions who use Excel to list and catalogue archives; others who use Excel for working with text may also benefit.

The session can also serve as a 'taster' for the conventional Excel for Archives courses when they resume: these cover a variety of techniques and focus on hand-on practice.

What you need to know

Although the concepts relating to functions and formulas are applicable to most spreadsheet software, the techniques demonstrated and practised in the session relate specifically to MS Excel (any version from Excel 2007 onwards) running on a Windows operating system.

The session is aimed primarily at those who have never used functions and formulas before, but to benefit from the practical exercises, you should have basic experience of using Excel, including:

- opening and saving an Excel workbook
- selecting cells, columns, rows and ranges
- entering and saving data

The resources you need

1: CONNECTIVITY

The session will be delivered using MS Teams. If you need advice on using this tool, contact the IT Learning Centre (courses@it.ox.ac.uk). Although the pace will be fairly gentle, the practical activities in particular will require careful concentration, so you may want to take steps to avoid external disturbance while you are taking part.

The demonstrations will use Excel 2016 and you will also see the trainer and some PowerPoint slides onscreen. During this part of the training you do not need any specific resources.

2: COURSE NOTES

You will need to refer to these in detail during the practical activities, which you will probably find easier if you print them out. As well as covering the activities listed in the session plan above, the notes cover additional activities (3.2 and 3.5) these are intended for use after the training session has finished, though you may find you have time to begin them during the session. The numbering of the activities continues from the associated online session *Two Key Techniques For Working With Text*

3: EXCEL WORKBOOK

For the activities you need the Excel workbook entitled *Excel for Archivists Functions and Formulas.xlsx* open (or ready to be opened) in Excel. We recommend taking a copy of the workbook sent to you, so that you can use a fresh version for further study following the session. You do not need to supply your own Excel workbooks or data (though for parts of the additional activities there is the option to use your own data if you wish).

4: COMPUTER RUNNING EXCEL

Any version of MS Excel (2007 or later) running on Windows operating system is suitable. If you use different software or earlier versions of Excel you may find it harder to carry out the practical activities effectively. You will be doing very little typing, but you may find it convenient to use a mouse rather than a touchpad during the practical activities

Session plan

The trainer will demonstrate the techniques being studied, including key features and common errors. You will then be able to practise the techniques yourself in a series of practical activities, the instructions for which are included in these Course Notes. The trainer will stay online while you carry out these activities in order to offer assistance if required. Additional activities are also available for further practice on your own after the training session has finished.

The session plan is as follows:

(note that the numbering of the activities continues from the companion training session Two Key Techniques For Working With Text)

Introduction and Welcome

Presentation: What is a formula? What is a function?

Activity 3.1 [10 minutes]

Presentation: Using formulas to create new data

Activity 3.3 [10 minutes]

Presentation: Relative and absolute cell references

Activity 3.4 [10 minutes]

Presentation: Taking things further with conditional formulas and combining formulas

Round up and questions

About the sample data

All the data required for the practical activities is in the workbook *Excel for Archivists Functions and Formulas.xlsx*. The instructions for each activity explain which worksheet to use. See the Introduction page of the workbook for more details and acknowledgements.

INTRODUCTION TO USING FORMULAS

ACTIVITY 3.1 FIRST STEPS

ABOUT THIS ACTIVITY

In this activity you will practise the following techniques:

- Entering a simple formula
- Using functions
- Using the Function Library

You will use the Worksheets entitled 'Activity 3_1 A. B and C' in the Excel workbook *Excel for Archivists Functions and Formulas.xlsx*

Work through the step by step instructions below in order. You may not have time to complete the activity during the time allocated, but you can return to it after the online session has finished.

STEP BY STEP INSTRUCTIONS FOR ACTIVITY 3.1

What is a formula?

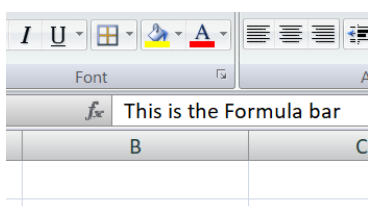
1 In the Excel workbook *Excel for Archivists Functions and Formulas.xlsx* open the worksheet entitled Activity 3_1A (this is a blank worksheet)

2 Click in Cell B5 (with the red border)
Type some text (eg your first name) into this cell
Comment: For convenience, this cell is referred to below as the 'text cell'

3 Click in any other cell
Type an equals sign followed by the address of the text cell as follows: **=B5**
Then click Enter (carriage return)
Comment: For convenience, this cell is referred to below as the 'formula cell'

4 Observe that the value from the text cell (B5) appears in the formula cell

5 Click in the cell in which you have created the formula. Look at the formula bar (this is the area below the ribbon, to the right of the Fx sign). Observe that this shows not the value you entered in the text cell, but the formula entered into the formula cell (**=B5**). The formula bar shows what is 'really' in the formula cell.



6 *Comment: Using 'equals' at the start of the cell content tells Excel that you are entering a formula*

7 Click in any other blank cell

Type an equals sign

Then click in the text cell [B5]

Then click Enter

Comment: to enter a cell address into a formula, you can either type the cell address (as in step 3 above), or you can click in the cell. Both methods have the same result.

8 Click in the text cell (cell B5 with the red border)

Change the words in the cell (eg change to your second name). Click enter

Comment: the text in changes in both formula cells

9 Click in each formula cell in turn, and look at the formula bar. Observe that what is 'really' in the formula cells [=B5] has not changed, but the rule expressed in the formula has been followed.

10 *Comment*

- *Note that the terms 'text cell' and 'formula cell' are not official Excel terminology, just used for convenience in this part of the demonstration*

What is a function?

11 In the Excel workbook *Excel for Archivists Functions and Formulas.xlsx* open the worksheet entitled Activity 3_1B (a fictional list of visitor numbers for the year 2020)

12 Click in cell B16 (next to the words 'Total (function)')

13 On the 'editing' group of the home ribbon click the Σ (autosum) symbol

Then click Enter

14 Observe that the total of all the values in cells B3 to B14 appears in cell B16.

15 Click in cell B16. Look at the formula bar: this displays the formula =SUM(B3:B15)

16 *Comments:*

- *the word 'SUM' is called a Function (conventionally written in upper case). It applies a certain rule to the data, in this case, adding up the numbers.*
- *There are many more functions available (to be looked at later), though 'SUM' is a bit unusual in having a dedicated button to select it.*

Creating formulas using the Function Library

17 In the Excel workbook *Excel for Archivists Functions and Formulas.xlsx* open the worksheet entitled Activity 3_1C. This is a brief extract from a catalogue.

18 Observe cell C5 ('February 1934') and suppose that we wish to convert this to three-letter month format ('Feb')

19 Click in cell E5. Open the Formulas Ribbon. Observe the 'Function Library'

20 From the function library choose the 'Text' drop down list

21 From the drop down list, select **LEFT**

Comment: A dialogue box appears

22 Click in the 'text' box of the dialogue box and enter C5 (alternative click in cell C5)

Comment: the data from cell C5 ('February 1934') appears to the right of the text box

23 In the 'Num_chars' box of the text box enter 3 *[to extract the first three characters]*

24 *Comments*

- *The dialogue box can be moved to a convenient position (click in the centre of the top border of the dialogue box, and drag it while holding down the left mouse button)*
- *The dialogue box includes information about the function, with links to Help*
- *The results of the formula appear (bottom left of dialogue box)*

25 Click OK

Comment: The dialogue box closes and the month appears in 3 letter format ('Feb') in cell E5

25 Click in cell E5

Observe the formula displayed in the formula bar: **=LEFT(C5,3)**

END OF ACTIVITY 3.1

What to do next:

- If you have a short time available, repeat activity 3.1, or parts of it, to consolidate your understanding
 - If you have more time, explore other functions available from the function library.
 - If you have more time (or after the online session has finished), look at activity 3.2, which takes this topic further
-

INTRODUCTION TO USING FORMULAS

ACTIVITY 3.2 (additional practice)

ABOUT THIS ACTIVITY

This Activity contains the following additional material to enhance your understanding of functions and formulas:

- ACTIVITY 3.2A:** Using data from a different worksheet in a formula
- ACTIVITY 3.2B:** Introduction to the functions MID and CONCATENATE
- ACTIVITY 3.2C:** Description of selected functions available in the Function Library.
- ACTIVITY 3.2D:** Three challenges (practice exercises using formulas)

The activity is intended for further study after the learning session has finished, but if you have time and are confident with the techniques studied in activity 3.1, you may have time to make a start during the session.

Using the Function Library was covered in Activity 3.1, paragraphs 17 onwards. If you did not have time to complete Activity 3.1 earlier, you may wish to return to (or read through) these paragraphs before starting Activity 3.2

The activity uses the worksheets 'Activity 3_2A' and 'Activity 3_2B' in the Excel workbook *Excel for Archivists Functions and Formulas.xlsx*

ACTIVITY 3.2A: Using data from a different worksheet in a formula

- 1 In the Excel workbook *Excel for Archivists Functions and Formulas.xlsx* open the worksheet entitled Activity 3_2A (a fictional list of Visitor numbers for the years 2016 – 2020)
- 2 Click in cell B7. Enter the equals sign (=)
- 3 Now open the worksheet entitled Activity 3_1B
- 4 In the worksheet Activity 3_1B click in cell B16 (total). Then click Enter.
Comment: take care! do not try to re-open the previous worksheet Activity 3_2A; Excel does this for you)
- 5 Observe that on clicking Enter, the previous worksheet (Activity 3_2A) automatically reopens and the sum created in step 7 appears in the list of year totals
- 6 In the worksheet Activity 3_2A click in cell B7 and look at the formula bar. Observe that the formula in cell B7 references a different worksheet using the worksheet name in single quote marks, followed by an exclamation mark (='Activity 3_1B'!B16)
- 7 *Comment: this also demonstrates that one formula (=SUM(B3:B15) in cell B7) can be used as data in another formula*

ACTIVITY 3.2B: Introduction to the functions MID and CONCATENATE

The MID Function

- 1 In the Excel workbook *Excel for Archivists Functions and Formulas.xlsx* open the worksheet entitled Activity 3_2B. This is a brief extract from a catalogue.
- 2 Click in cell G3 ('year from formula' column).
- 3 From the function library on the Formulas Ribbon choose 'Text'. From the drop down list, select MID
- 4 Click in the 'text' box of the dialogue box, then click in cell E3 (covering dates)
In the 'Start-num' box of the text box enter 5 *[to start extracting at the fifth character]*
In the 'Num_chars' box of the text box enter 4 *[to extract four characters]*
Click OK
Comment: The 'year from' (2001) appears in cell G3
- 5 Click in cell G3. Look at the formula bar
Comment: The formula is displayed =MID(E3,5,4)

Using CONCATENATE to combine text

- 6 Continue using the worksheet entitled Activity 3_2.
- 7 Click in cell D3 (Title and description formula)
- 8 From the function library on the Formulas Ribbon choose 'Text'. From the drop down list, select CONCATENATE
- 9 Click in the 'text 1' box of the dialogue box. Then click in cell B3 (Title)
- 10 Click in the 'text 2' box of the dialogue box. Then click in cell C3 (Description)
Click OK to close the dialogue box.
- 11 Click in cell D3. Observe the contents of the cell in the cell and in the formula bar.
Comment: the Title and description fields have been combined using a formula (=CONCATENATE(B3,C3)), but with no punctuation or gap between them
- 12 Click in cell D4. From the function library on the Formulas Ribbon choose 'Text'. From the drop down list, select CONCATENATE
- 13 Click in the 'text 1' box of the dialogue box. Then click in cell B4
- 14 In the 'text 2' box of the dialogue box type a colon followed by two spaces (:)
- 15 Click in the 'text 3' box of the dialogue box. Then click in cell C4 (Description).
Click OK to close the dialogue box.
- 16 Click in cell D4. Observe the contents of the cell
Comment: the Title and description fields have been combined using a formula, separated with appropriate punctuation.

17 Click in cell D4. Observe the contents of the cell the formula bar. In particular notice that the formula (=CONCATENATE(B4," : ",C4)) has inserted double quotes around the text which you typed. This indicates that it is text, not data taken from another cell.

18 Click in cell D4. Click in the formula bar in the space between the quotation marks. Type the word *description*. Take care not to alter or delete the quotation marks. Then click Enter. Observe the change in cell D4

Comment: the change made in the formula bar is reflected in the formula and in its results.

19 Click in cell D4. Then click the 'Insert function' icon (Fx to the left of the formula bar).

Comment: The dialogue box re-opens, enabling further editing

20 Click in the 'text 3' box

Comment A further box 'text 4' appears, enabling additional terms to be added if required

21 If you wish, copy the formula in cell D3 or that in cell D4 and paste it in to the other cells in column D to see the effect. Or repeat the exercise replacing the text : with the words 'further description:'

ACTIVITY 3.2C Description of selected functions available in the Function Library.

The following functions can all be useful when working with text. Choose one or more and experiment with the effect it has on the text. You can create your own data or use the worksheet entitled Activity 3_2B in the Excel workbook *Excel for Archivists Functions and Formulas*.

| SOME USEFUL FUNCTIONS | | |
|------------------------------|---|---------------------------|
| Function | Description | Example |
| LEFT | Extracts a given number of characters, counting from the left | =LEFT(A1,3) |
| RIGHT | Extracts a given number of characters, counting from the right | =RIGHT(B1,6) |
| MID | Extracts a given number of characters, starting at a chosen character | =MID(C1,5,7) |
| CONCATENATE | Joins the contents of two or more cells and/or typed text. | =CONCATENATE(A1,"and",B1) |
| & | Similar effect to CONCATENATE, but quicker to type. Cannot be accessed from the Function Library | =A1&"and"&B1 |
| TRIM | Removes excess spaces, leaving only a single space between words | =TRIM(D1) |
| LOWER | Converts text to all lower case | =LOWER(B1) |
| PROPER | Converts the first character in each word to upper case and the remainder to lower case | =PROPER(B1) |
| UPPER | Converts text to all upper case | =UPPER(B1) |
| SUM | Calculates the total for a range of numbers [alternatively, select the range and click the Σ (sum) symbol on the editing menu] | =SUM(A1:A99) |

ACTIVITY 3.2D Three Challenges

If you have become confident using Functions and Formulas, try the following exercises for an additional challenge.

Exercise 1

Open a blank worksheet. Type your first name in cell A3 and your second name in cell B3. Choose any unused cell, and enter a formula which will produce the result below [with your own name of course].

Hint: you will need to use at least FOUR boxes in the concatenate dialogue box.

| |
|--|
| First name: Gillian. Second name: Sheldrick |
|--|

Exercise 2

Open the worksheet entitled Activity 3_2B in the Excel workbook *Excel for Archivists Functions and Formulas*. Enter formulas in cells H3, H4, I3 and I4 which will give the correct results for 'month to' and 'year to'.

Exercise 3

Open the worksheet entitled Activity 3_2B in the Excel workbook *Excel for Archivists Functions and Formulas*. Title and description are currently in separate fields, but a new house style requires them to be combined into a single field (column D). Create a formula which will achieve this.

END OF ACTIVITY 3.2

INTRODUCTION TO USING FORMULAS

ACTIVITY 3.3 Using formulas to create new data

ABOUT THIS ACTIVITY

In this activity you will practise the following techniques:

- Copying formulas to create new data
- Fixing the new data to make it independent of the formula

You will use the Worksheet entitled 'Activity 3_3' in the Excel workbook *Excel for Archivists Functions and Formulas.xlsx*

Work through the step by step instructions below in order. If you do not have time to complete the activity during the time allocated you can return to it after the online session has finished.

STEP BY STEP INSTRUCTIONS FOR ACTIVITY 3.3

Copying formulas to create new data

1 In the Excel workbook *Excel for Archivists Functions and Formulas.xlsx* open the worksheet entitled Activity 3_3. This is a brief extract from a catalogue (used in activity 3_1). Observe cell C5 ('February 1934') and suppose that we wish to extract just the four digits of the year (1934).

2 A formula has already been created in cell E5. To see the formula click in cell E5 and look at the Formula bar.

Comment: if the formula has accidentally been deleted, type the following in E5: =RIGHT(C5,4)

3 Copy the contents of cell E5. Then select the block of cells E6 to E13, and click paste

4 Observe the values which appear in column E and compare them with the data in column C (date from)

Comment: The appropriate year appears in each cell in column E

5 Click in each cell in column E in turn, and look at each formula in the formula bar

Comment: Excel has automatically adjusted the formula so that the data is extracted from the appropriate cell in column C; the original formula in cell E5 has not been copied exactly. For example, in row 8 the formula reads =RIGHT(C8,4)

Fixing the new data

6 Click in cell C10 (July 1959). Delete the figures 19, so that the cell contents reads July 59, then click Enter. Observe the value in cell E10

Comment: the value in cell E10 has changed and no longer reads '1959'. This is because the formula in cell E10 is only a rule, meaning 'display the last four digits of cell C10'. if the value in cell C10 is changed – deliberately or by accident - what is displayed in E10 changes also.

7 Select column E and choose Copy. Then paste the selection into column F. Do not use the generic paste command, but choose Paste Values (see the next paragraph for advice on Paste Values).

8 Note that in most versions of Excel, Paste Values is available by clicking the arrow under Home Ribbon > Paste. It can also be accessed via Home Ribbon > Paste > Paste Special.

9 Click in each cell in column F in turn, and look at the contents of each cell in the formula bar. Compare with the contents of the equivalent cell in column E.

Comment: By using Paste Values the result of the formula is turned into text

10 Choose any cell in column C and change the year (for example, change 1940 to 2021). Observe what happens to the equivalent cells in columns in E and F.

Comment: the formula in column E updates the display to show the new value. The text in column F is fixed and does not change.

11 Advice:

- Shading formula cells or columns is a useful technique to help remind you that are working with a formula cell, not a fixed value. You can also use the word 'Formula' in the column heading (though remember to remove the word once you have pasted as 'paste values'); see for example column E in the worksheet 'Activity 3_3'.
- Using 'paste values' to 'fix' the data can be particularly important if you are using formulas to transform the data into a format suitable for transfer (for example, for import into an archive management system); you normally want to move data, not formulas.
- Don't forget that the formula cannot be in the same cell as the text which it operates on.

12 Comment:

- *In activity 3.1, we used the function LEFT to extract 'Feb' from 'February 1934', and in activity 3.3 we used RIGHT to extract the year 1934. These two elements can be combined to create the term 'Feb 1934' by using the CONCATENATE function, which is covered in additional activity 3.2B.*

END OF ACTIVITY 3.3

What to do next:

- If you have a short time available, repeat activity 3.3, or parts of it, to consolidate your understanding
 - If you have more time, practise copying and pasting formulas which use a variety of different functions (for example, those you used in Activities 3.1 or 3.2)
-

INTRODUCTION TO USING FORMULAS

ACTIVITY 3.4: Relative and absolute cell references

ABOUT THIS ACTIVITY

In this activity you will practise the following techniques:

- Identifying problems resulting from copying formulas
- Using absolute cell references to control how copied formulas behave

You will use the Worksheet entitled 'Activity 3_4' in the Excel workbook *Excel for Archivists Functions and Formulas.xlsx*

Work through the step by step instructions below in order. If you do not have time to complete the activity during the time allocated you can return to it after the online session has finished.

STEP BY STEP INSTRUCTIONS FOR ACTIVITY 3.4

Reminder: Default behaviour when a formula is copied and pasted

1 In Activity 3.3 you saw that when you copy a formula and paste it into multiple cells, Excel automatically adjusts the formula so that it uses data from the appropriate cells. For example, the formula **=RIGHT(C5,4)** in row 5 adjusts to **=RIGHT(C8,4)** when copied and pasted into row 8. (If you need to refresh your memory, you could revisit Activity 3.3, steps 1 – 5 before continuing).

Problems with repeating a formula

2 In the Excel workbook *Excel for Archivists Functions and Formulas.xlsx* open the worksheet entitled Activity 3_4. This represents an extract from a catalogue, with numerical item references.

3 Click in cell A3 (column 'Formula 1) and look in the formula bar at the formula it contains
Comment: Cell A3 contains the formula =C3+E1 This generates a new item reference, created by adding the original item reference (column C) to the value given in E1 ('Increase item reference by:')

4 Click in Cell E1 and type any number. Then click Enter (carriage return). Observe the value in cell A3

Comment: the value in A3 is updated to reflect the new value in E1

5 Copy the formula in cell A3 to a few cells in column A (down to about A10), and view the results
Comment: Instead of adding your chosen number to the item reference, the formulas add the item reference and the 'date from' (including in cell A4, trying to add the item reference to the words 'date from', resulting in an error message). This is because the cell reference has automatically changed relative to the cell in which the formula appears (=C3+E1 in row 3, but =C7+E5 in row 7)

Using absolute cell references

6 Click in cell B3 (column 'Formula 2)

In cell B3 type the following formula: **=C3+\$E\$1**

Then click Enter (carriage return).

Comment: This is identical to the formula in cell A3, except for the \$ signs. The result is to generate a new item reference, identical to that in cell A3

7 Copy this formula down a few cells in column B, and view the results

*Comment: Each formula adds the value in cell E1 to the item reference. Adding the dollar signs creates an **ABSOLUTE REFERENCE** which does not alter in different row numbers*

*The reference number used (in column C) does change as appropriate, as the column C reference (with no dollar signs) is a **RELATIVE REFERENCE***

8 Change the number in cell E1. Then click Enter. Notice the values in column B

Comment: The values in column B adjust accordingly

Behaviour of formulas when inserting new rows or columns

9 Insert a new column between columns C and D, so that the number you entered in cell E1 is now in cell F1 [select column D then use home ribbon>cells >insert). Observe what happens to the formulas in columns A and B.

10 Insert a new row above row 1, so that the number you originally entered in cell E1 is now in cell F2. Observe what happens to the formulas in columns A and B.

Comment: Both absolute and relative references adjust if new rows or columns are inserted. The results of the formulas in column B do not change, but the formulas themselves in column B have all adjusted to refer to the correct cells

Summary

12 Cell references in the form **A3** [column A row 3] are RELATIVE: if you include a cell reference in a formula, the cell references will automatically change when you move or copy the formula to a new cell.

13 Cell references in the form **\$A\$3** are ABSOLUTE: they remain unchanged when you move or copy a formula to a new cell.

14 Cell references can combine a relative and absolute element: **\$A3** indicates that the column (A) is absolute but the row (3) is relative; in the format **A\$3** the column is relative and the row is absolute.

15 Both relative and absolute references adjust automatically when new rows or columns are inserted.

END OF ACTIVITY 3.4

What to do next:

- If you have a short time available, repeat activity 3.3, or parts of it, to consolidate your understanding
 - If you have more time, try some of the additional exercises for this topic (Activity 3.5, page 19)
-

INTRODUCTION TO USING FORMULAS

ACTIVITY 3.5: Further practice using relative and absolute cell references

ABOUT THIS ACTIVITY

This Activity provides some ideas for exploring relative and absolute cell references. The activity is intended for further study after the session has finished, but if you have time and are confident with the techniques studied in activity 3.4, you may have time to make a start during the session.

RELATIVE AND ABSOLUTE CELL REFERENCES: SUGGESTIONS FOR FURTHER PRACTICE

The best way to consolidate your understanding of the effects of using relative and absolute cell references in formulas is to experiment. You can use the sample data in the In the Excel workbook *Excel for Archivists Functions and Formulas.xlsx*, worksheet entitled Activity 3_5, or create your own data (important: if you decide to use your own data, work with a COPY of your data, not on an original worksheet, in case you accidentally corrupt your data)

Depending on what you want to focus on, you could include some of the following:

Different types of cell reference

- **Relative** cell references (in the form **A1**)
- **Absolute** cell references (**\$A\$1**)
- **Mixed** cell references (**\$A1** or **A\$1**)

Different types of formula

- A simple formula such as **=A1** may be quickest to enter
- Calculations (such as adding a number of years to a date (eg **=C3+25**) may help to identify circumstances generating error messages
- Text-based formulas such as **=LEFT(A1)** may be less likely to result in error messages, and errors may be less immediately obvious

Copying formulas to different places

- Copy a formula and paste to successive ROWS or successive COLUMNS: look at the formula in the formula bar, to observe what changes (if any) Excel makes to your original formula.

Inserting rows and columns

Copy a formula into successive rows or columns, then insert new rows or columns within the data. Before and after inserting columns and rows, look at the formulas in the formula bar, to observe what changes Excel makes to them.

END OF ACTIVITY 3.5

Further information and contact details

For more information about courses run by the IT Learning Centre, contact courses@it.ox.ac.uk

You are also welcome to contact Gillian Sheldrick (SheldrickG@Gmail.com) for any of the following:

- support with the activities covered in this session
- advice on Excel generally
- To be added to the mailing list to receive Gillian's Excel for Archivists newsletter three or four times a year; this includes tips for using Excel in an archives context and news on forthcoming training.