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3 Linking Data in Worksheets

In Chapter 3, you will learn how to:

- Name and copy worksheets
- Create formulas to read data from multiple worksheets
- Use formulas to perform calculations across multiple worksheets
- Apply cell styles.

WORKBOOKS AND WORKSHEETS

An Excel spreadsheet file is referred to as a workbook. By default, each Excel workbook consists of three worksheets. A workbook is equivalent to a copybook used for writing. Each worksheet is equivalent to a specific page in the copybook. When writing in a copybook, we go on to a new page when we fill up a page. In an Excel workbook, we generally go on to a new worksheet when we fill up the screen with data. When data has been entered in more than one worksheet, we can summarise data from multiple worksheets using formulas.

NAMING AND INSERTING WORKSHEETS

To rename Sheet1, point at the worksheet tab for Sheet1 with the mouse and then right click (Figure 3.1).

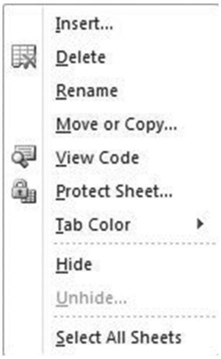
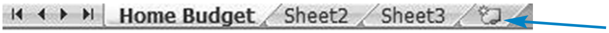


Figure 3.1 Renaming a worksheet

Select Rename from the pop-up menu.


Home Budget
Sheet2
Sheet3

Insert Worksheet tab

Figure 3.2 Sheet1 has been renamed as Home Budget

Type in the new name (in this case, *Home Budget*) for Sheet1 and press Enter. The name of Sheet1 changes to *Home Budget*, as shown in Figure 3.2.

Additional worksheets can be added by right clicking any worksheet tab and then selecting Insert from the pop-up menu. You can also add a new worksheet by clicking the Insert Worksheet tab (Figure 3.2).

Use the Shift + F11 keyboard combination to quickly insert a new worksheet.

In Excel 2010, there is no limit to the number of worksheets that you can have in a workbook. You can continue to insert new worksheets until your PC runs out of memory.

CHANGING THE WORKSHEET TAB COLOUR

A useful feature in Excel is the ability to change the colour of a worksheet tab. This can be used to emphasise a specific worksheet. It can also be used to colour code worksheets. For example, in a spreadsheet detailing sales by region, each region's worksheet tab could be assigned a different colour.

To change the worksheet tab colour, right click the worksheet tab and select Tab Color from the pop-up menu, as shown in Figure 3.3.

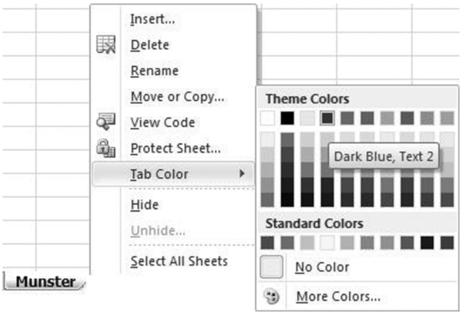

Insert...
Delete
Rename
Move or Copy...
View Code
Protect Sheet...
Tab Color
Hide
Unhide...
Select All Sheets
Munster
Theme Colors
Dark Blue, Text 2
Standard Colors
No Color
More Colors...

Figure 3.3 Setting the worksheet tab colour

In Figure 3.3, a worksheet tab colour of Dark Blue has been selected for the Munster worksheet.

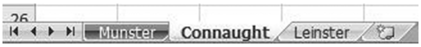


Figure 3.4 The colour of the Munster worksheet tab has been changed

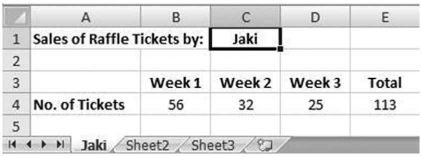
Figure 3.4 shows the resulting Munster worksheet tab with white text on a blue background.

LINKING WORKSHEETS IN A WORKBOOK

Organising data into multiple worksheets, instead of entering all your data in a single worksheet, can make a spreadsheet easier to use and easier to understand. In practice, it is best to go on to a new worksheet once you have filled the computer screen with data. In the following worked example, we will see how data relating to the sale of raffle tickets stored in three separate worksheets can be summarised in a fourth worksheet. There are three ticket sellers: Jaki, Ian and Geraldine. A separate worksheet is used to record each ticket seller's sales.

Worked Example

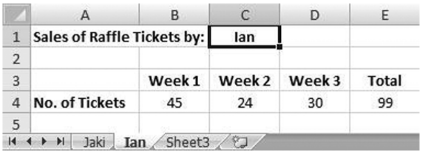
1. Create a new spreadsheet workbook and rename Sheet1 as *Jaki*.
2. Enter data in the worksheet named *Jaki*, as shown in Figure 3.5.



	A	B	C	D	E
1	Sales of Raffle Tickets by:		Jaki		
2					
3		Week 1	Week 2	Week 3	Total
4	No. of Tickets	56	32	25	113
5					

Figure 3.5

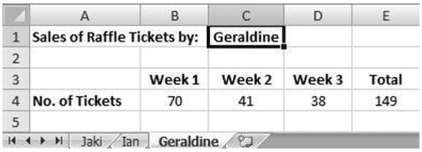
3. Rename Sheet2 as *Ian* and enter data as shown in Figure 3.6.



	A	B	C	D	E
1	Sales of Raffle Tickets by:		Ian		
2					
3		Week 1	Week 2	Week 3	Total
4	No. of Tickets	45	24	30	99
5					

Figure 3.6

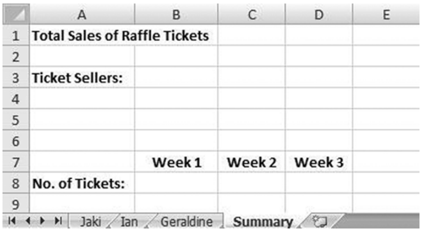
4. Rename Sheet3 as *Geraldine* and enter data as shown in Figure 3.7.



	A	B	C	D	E
1	Sales of Raffle Tickets by:		Geraldine		
2					
3		Week 1	Week 2	Week 3	Total
4	No. of Tickets	70	41	38	149
5					

Figure 3.7

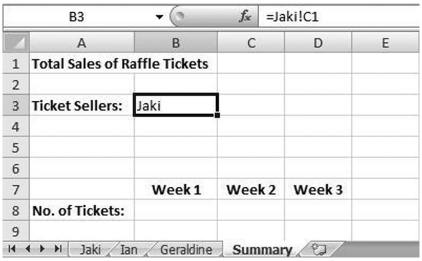
5. Create a fourth summary worksheet by clicking the Insert Worksheet tab. *(This appears immediately to the right of the Geraldine worksheet tab.)* Rename this worksheet as *Summary*.
6. Enter data in the worksheet named *Summary*, as shown in Figure 3.8.



	A	B	C	D	E
1	Total Sales of Raffle Tickets				
2					
3	Ticket Sellers:				
4					
5					
6					
7		Week 1	Week 2	Week 3	
8	No. of Tickets:				
9					

Figure 3.8

7. Position the cell pointer in B3 of the *Summary* worksheet. Type = and then click Jaki's Sheet tab. Now select C1 in Jaki's worksheet. Complete the linking formula by pressing Enter. (***Note:*** *Do not click back into the Summary worksheet*.) Figure 3.9 shows the linking formula displayed in the formula bar. The formula refers firstly to the worksheet name and then to a specific cell in that worksheet; **=Jaki!C1** means 'display the data stored in C1 in the worksheet named *Jaki*'.

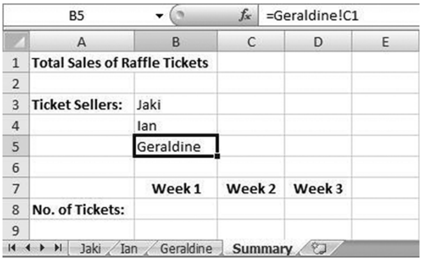


B3 =Jaki!C1

	A	B	C	D	E
1	Total Sales of Raffle Tickets				
2					
3	Ticket Sellers:	Jaki			
4					
5					
6					
7		Week 1	Week 2	Week 3	
8	No. of Tickets:				
9					

Figure 3.9

8. In the *Summary* worksheet, create linking formulas to link to read the ticket seller's name from Ian and Geraldine's worksheet, as shown in Figure 3.10.



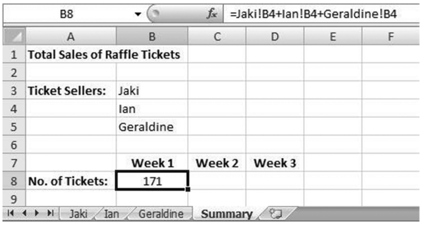
B5 =Geraldine!C1

	A	B	C	D	E
1	Total Sales of Raffle Tickets				
2					
3	Ticket Sellers:	Jaki			
4		Ian			
5		Geraldine			
6					
7		Week 1	Week 2	Week 3	
8	No. of Tickets:				
9					

Figure 3.10

9. To add numbers across three worksheets, position the cell pointer in B8 of the *Summary* worksheet.
   - Type =, click the worksheet named *Jaki*, then select B4.
   - Type +, click the worksheet named *Ian*, then select B4.
   - Type +, click the worksheet named *Geraldine*, then select B4.
   - Press Enter. (***Note:*** *Don't click the worksheet named Summary at this point*.)

The resulting linking formula, which adds across three worksheets, is displayed in Figure 3.11.



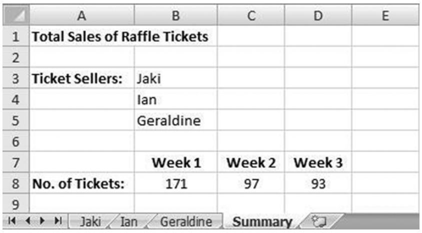
B8 =Jaki!B4+Ian!B4+Geraldine!B4

	A	B	C	D	E	F
1	Total Sales of Raffle Tickets					
2						
3	Ticket Sellers:	Jaki				
4		Ian				
5		Geraldine				
6						
7		Week 1	Week 2	Week 3		
8	No. of Tickets:	171				
9						

Figure 3.11

N This formula can also be typed directly into the spreadsheet. At this stage it's easier to create the formula by selecting cells in different worksheets.

10. In the *Summary* worksheet, copy the linking formula to week 2 and week 3 (Figure 3.12).



	A	B	C	D	E
1	Total Sales of Raffle Tickets				
2					
3	Ticket Sellers:	Jaki			
4		Ian			
5		Geraldine			
6					
7		Week 1	Week 2	Week 3	
8	No. of Tickets:	171	97	93	
9					

Figure 3.12

11. Save the spreadsheet as **Raffle Ticket Sales**.

As well as referring to cells, the formula in Figure 3.11 also refers to worksheets. *=Jaki!B4* means cell B4 in the worksheet named *Jaki*. Notice how each worksheet name is followed by an exclamation mark.

If the name of the worksheet you are linking to includes spaces, Excel will include apostrophes in the linking formula. Example: *='Week 1 Sales'!C9* links to cell C9 in the worksheet named *Week 1 Sales*. Apostrophes are not required in the linking formula when the worksheet name doesn't include spaces. Example: *=Monday!F6* links to cell F6 in the worksheet named *Monday*.

Copying Worksheets

In a workbook containing many worksheets that are similar in structure, copying and then editing an existing worksheet is often quicker than creating a new worksheet from scratch. To copy a worksheet, right click the worksheet name, as shown in Figure 3.13.

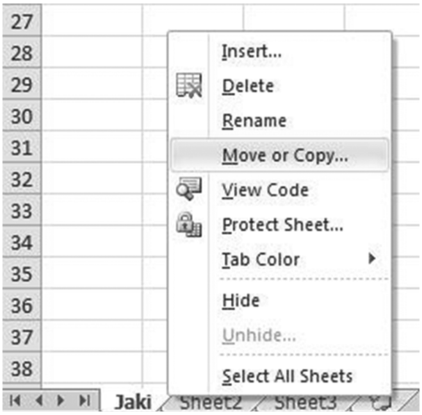
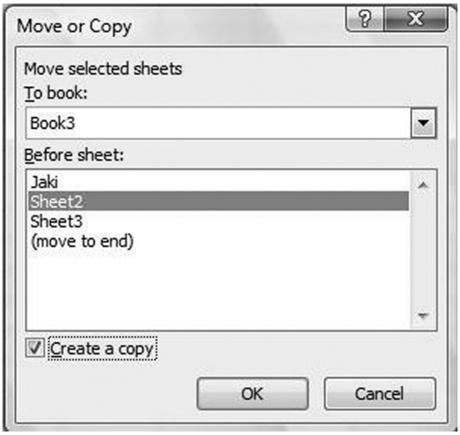

27
28
29
30
31
32
33
34
35
36
37
38
Insert...
Delete
Rename
Move or Copy...
View Code
Protect Sheet...
Tab Color
Hide
Unhide...
Select All Sheets
Jaki
Sheet2
Sheet3

Figure 3.13

1. Select Move or Copy from the pop-up menu. The Move or Copy dialog box is displayed (Figure 3.14).


Move or Copy

Move selected sheets

To book: Book3

Before sheet:

Jaki
Sheet2
Sheet3
(move to end)

☑ Create a copy

Figure 3.14

2. Click *Create a copy* and select *Sheet2*. This means that a copy of the worksheet named *Jaki* will be inserted before *Sheet2*. Excel assigns the name *Jaki(2)* to this worksheet. It can be renamed by right clicking the worksheet name and selecting Rename from the pop-up menu.

You can also copy a worksheet by dragging its sheet tab and dropping it on another sheet tab while holding down the *CTRL* key.

FORMATTING WITH CELL STYLES

Cell
Styles

Excel has a number of pre-defined cell styles. Using cell styles allows you to apply a number of formats in one step as well as ensuring consistent formatting throughout your spreadsheet. Clicking the Cell Styles button in the Home section of the Ribbon displays Excel's pre-defined cell styles, shown in Figure 3.15.

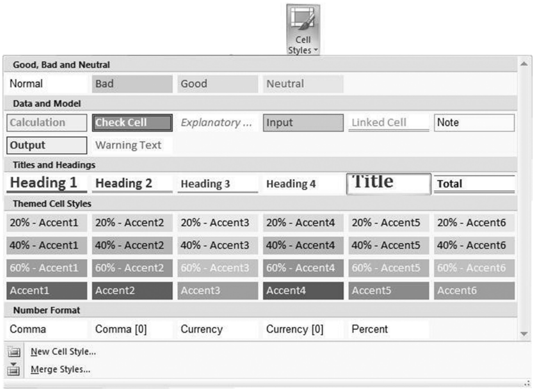

Cell
Styles
Good, Bad and Neutral
Normal
Bad
Good
Neutral
Data and Model
Calculation
Check Cell
Explanatory ...
Input
Linked Cell
Note
Output
Warning Text
Titles and Headings
Heading 1
Heading 2
Heading 3
Heading 4
Title
Total
Themed Cell Styles
20% - Accent1
20% - Accent2
20% - Accent3
20% - Accent4
20% - Accent5
20% - Accent6
40% - Accent1
40% - Accent2
40% - Accent3
40% - Accent4
40% - Accent5
40% - Accent6
60% - Accent1
60% - Accent2
60% - Accent3
60% - Accent4
60% - Accent5
60% - Accent6
Accent1
Accent2
Accent3
Accent4
Accent5
Accent6
Number Format
Comma
Comma [0]
Currency
Currency [0]
Percent
New Cell Style...
Merge Styles...

Figure 3.15 Pre-defined cell styles available in Excel

When applying styles, it is best to select styles from the same column. The assignments in this chapter will be formatted using the Accent1 styles from the first column.

Linking Data in Worksheets Assignment One

Part 1: Create Joe Murphy's worksheet

1. Create a new spreadsheet workbook and enter the data shown in Table 3.1 in Sheet1.

Dates can be copied using the Fill Handle. Enter 04/10/14 and drag the Fill Handle downwards to enter the remaining dates. This only works when the dates are in sequence.

	A	B	C	D	E	F
1	Travel Expenses		Joe Murphy			
2	Date	Kilometres a.m.	Kilometres p.m.	Distance Travelled	Rate per Kilometre	Total Due
3	04/10/14	25109	25271		0.85	
4	05/10/14		25388		0.85	
5	06/10/14		25529		0.85	
6	07/10/14		25701		0.85	
7	08/10/14		25853		0.85	
8						
9			Total			

Table 3.1

2. Rename Sheet1 as *Joe Murphy*.
3. In B4 enter the linking formula =*C3* to read the kilometres p.m. of the previous day. Copy this linking formula to B5, B6 and B7.
4. Calculate the distance travelled and the total due.
5. Use the SUM function to calculate the total distance travelled and overall total due.
6. Click the Cell Styles button in the Home section of the Ribbon and apply the formatting listed in Table 3.2.

Range of Cells	Cell Style
A1:C1	60% Accent1
A2:F2, C9	Accent1
A3:F7, D9, F9	20% Accent1

Table 3.2

Part 2: Create Sile O Shea's worksheet

1. Rename Sheet2 as *Sile O Shea*.
2. Either enter the data shown in Table 3.3 in the worksheet named *Sile O Shea* or copy Joe Murphy's worksheet and then change the employee name and the kilometres a.m. and p.m. figures.
3. Apply styles as in Joe Murphy's worksheet. (This is not necessary if you created Sile O Shea's worksheet using the *copy* method.)

	A	B	C	D	E	F
1	**Travel Expenses**		**Sile O Shea**			
2	**Date**	**Kilometres a.m.**	**Kilometres p.m.**	**Distance Travelled**	**Rate per Kilometre**	**Total Due**
3	04/10/14	73109	73215		0.85	
4	05/10/14		73399		0.85	
5	06/10/14		73501		0.85	
6	07/10/14		73546		0.85	
7	08/10/14		73722		0.85	
8						
9			**Total**			

Table 3.3

4. Calculate kilometres a.m., distance travelled and total due for Sile O Shea.

Part 3: Create Tom Doyle's worksheet

1. Rename an empty worksheet as *Tom Doyle*.
2. Enter the data shown in Table 3.4 in the worksheet named *Tom Doyle* (*or copy and edit an existing worksheet*).
3. Apply styles as in Joe Murphy's worksheet. (This is not necessary if you created Tom Doyle's worksheet using the *copy* method.)

	A	B	C	D	E	F
1	**Travel Expenses**		**Tom Doyle**			
2	**Date**	**Kilometres a.m.**	**Kilometres p.m.**	**Distance Travelled**	**Rate per Kilometre**	**Total Due**
3	04/10/14	59115	59209		0.85	
4	05/10/14		59356		0.85	
5	06/10/14		59592		0.85	
6	07/10/14		59771		0.85	
7	08/10/14		59920		0.85	
8						
9			**Total**			

Table 3.4

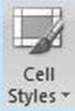
4. Calculate kilometres a.m., distance travelled and total due for Tom Doyle.

Part 4: Create the Summary worksheet

1. Rename an empty worksheet as *Travel Summary* or insert a new worksheet if necessary.
2. Enter the data shown in Table 3.5 in the worksheet named *Travel Summary*.

	A	B	C
1	**Summary of Travel Expenses**		
2			
3	**Employee Name**	**Distance Travelled**	**Total Due**
4			
5			
6			

Table 3.5

3. Enter linking formulas in the shaded cells to read the employee name, distance travelled and total due from each of the three employee worksheets.
4. 

Click the Cell Styles button in the Home section of the Ribbon and apply the formatting listed in Table 3.6.

Range of Cells	Cell Style
A1	60% Accent1
A3:C3	Accent1
A4:C6	20% Accent1

Table 3.6

5.
Highlight *A1:C1*. Merge the *Summary of Travel Expenses* heading across cells *A1:C1* using the Merge and Center button.
6. Format money amounts to currency in all worksheets.
7. Adjust column widths where necessary.
8. Delete all unused worksheets.
9. Print the *Summary* worksheet.
10. Change Joe Murphy's kilometres (p.m.) to 25900 for 08/10/2014. Verify that:
    √
    - ☐ Distance travelled on 08/10/2014 is now 199.
    - ☐ Total due for 08/10/2014 is now €169.15.
    - ☐ Joe's overall distance travelled is now 791 in both the *Joe Murphy* and *Summary* worksheets.
    - ☐ Joe's overall total due is now €672.35 in both the *Joe Murphy* and *Summary* worksheets.
11. Save the spreadsheet as **Travel Expenses**.

Linking Data in Worksheets Assignment Two

Part 1: Create the Spreadsheets Results worksheet

1. Create a new spreadsheet workbook and enter the data shown in Table 3.7 in Sheet1.

Ensure that AutoComplete is turned on to speed up the entering of results.

Excel 2010: Click the File tab and select Options from the sidebar. In the Excel Options dialog box, select Advanced and ensure that the *Enable Autocomplete for Cell Values* check box is ticked.

Excel 2007: Click the Microsoft Office button and then click Excel Options. Select Advanced from the list of Excel options and ensure that the *Enable AutoComplete for Cell Values* check box is ticked.

When AutoComplete is on, Excel will suggest the remaining letters of a particular result as soon as you type the first letter as long as that result has been previously entered. For example, when entering the second result, simply type *M*. Excel displays *Merit* in the current cell. Press Enter to accept Excel's suggestion.

In Excel 2010, the Office button has been replaced by the File menu.

	A	B	C	D	E
1	**Spreadsheets Results**				
2					
3	**Student Name**	**Result**		**No of Distinctions**	
4	Tom Boyle	Merit		**No of Merits**	
5	Naresh Jeeri	Merit		**No of Passes**	
6	William Treacy	Pass		**No of Fails**	
7	Sharon Byrne	Merit		**Total Students**	
8	Jaki McKay	Distinction			
9	Derek McCormack	Fail			
10	Eileen Nolan	Merit			
11	Margaret O Connell	Distinction			
12	Dermot Rogers	Pass			
13	John Keegan	Merit			
14	Mary Hamilton	Merit			
15	Abasiama Omotoso	Merit			
16	Joe Dalton	Distinction			

Table 3.7

2. Rename Sheet1 as *Spreadsheets Results*.
3. Assign the name **ssresults** to the range *B4:B16*.
4. Assign the name **ssstudents** to the range *A4:A16*.

Holding down Shift and then pressing an arrow key is another way of highlighting cells in a spreadsheet. This is particularly useful when the highlighted range extends beyond one screen.

5. Use the COUNTIF function, together with the range name *ssresults*, to count the number of distinctions, merits, passes and fails.

Use F3 to paste the cell name into the function.

6. Use the COUNTA function, together with the range name *ssstudents,* to count the number of students.
7. Apply the cell styles listed in Table 3.8.

Range of Cells	Cell Style
A1	Title
A3:B3, D3:D7	Accent1
A4:B16, E3:E7	20% Accent1

Table 3.8

Part 2: Create the Databases Results worksheet

1. Rename Sheet2 as *Database Results*.

	A	B	C	D	E
1	**Database Results**				
2					
3	**Student Name**	**Result**		**No of Distinctions**	
4	Tom Boyle	Pass		**No of Merits**	
5	Naresh Jeeri	Fail		**No of Passes**	
6	William Treacy	Distinction		**No of Fails**	
7	Sharon Byrne	Merit		**Total Students**	
8	Jaki McKay	Merit			
9	Derek McCormack	Pass			
10	Eileen Nolan	Distinction			
11	Margaret O Connell	Distinction			
12	Dermot Rogers	Merit			
13	John Keegan	Fail			
14	Mary Hamilton	Merit			
15	Abasiama Omotoso	Pass			
16	Joe Dalton	Merit			

Table 3.9

2. Enter the data shown in Table 3.9 in the worksheet named *Database Results*.

Copy the student names from the *Spreadsheet Results* worksheet.

3. Assign the name **dbresults** to the range *B4:B16*.
4. Assign the name **dbstudents** to the range *A4:A16*.
5. Use the COUNTIF function, together with the range name *dbresults*, to count the number of distinctions, merits, passes and fails.
6. Use the COUNTA function, together with the range name *dbstudents*, to count the number of students.
7. Apply the cell styles listed in Table 3.10.

Range of Cells	Cell Style
A1	Title
A3:B3, D3:D7	Accent1
A4:B16, E3:E7	20% Accent1

Table 3.10

Part 3: Create the Word Processing Results worksheet

1. Rename an empty worksheet as *Word Processing Results*.

	A	B	C	D	E
1	**Word Processing Results**				
2					
3	**Student Name**	**Result**		**No of Distinctions**	
4	Tom Boyle	Distinction		**No of Merits**	
5	Naresh Jeeri	Merit		**No of Passes**	
6	William Treacy	Merit		**No of Fails**	
7	Sharon Byrne	Pass		**Total Students**	
8	Jaki McKay	Merit			
9	Derek McCormack	Merit			
10	Eileen Nolan	Distinction			
11	Margaret O Connell	Pass			
12	Dermot Rogers	Merit			
13	John Keegan	Merit			
14	Mary Hamilton	Merit			
15	Abasiama Omotoso	Merit			
16	Joe Dalton	Distinction			

Table 3.11

2. Enter the data shown in Table 3.11 in the worksheet named *Word Processing Results* (or copy and edit the *Database Results* worksheet).
3. Assign the name **wpresults** to the range *B4:B16*.
4. Assign the name **wpstudents** to the range *A4:A16*.
5. Use the COUNTIF function, together with the range name *wpresults*, to count the number of distinctions, merits, passes and fails.
6. Use the COUNTA function, together with the range name *wpstudents*, to count the number of students.
7. Apply the cell styles listed in Table 3.12.

Range of Cells	Cell Style
A1	Title
A3:B3, D3:D7	Accent1
A4:B16, E3:E7	20% Accent1

Table 3.12

Part 4: Create the Summary worksheet

1. Rename an empty worksheet as *Summary*. *(Insert a new worksheet, if necessary.)*
2. Enter the data shown in Table 3.13 in the worksheet named *Summary*.

	A	B	C	D
1	**Exam Report**			
2				
3		**Spreadsheets**	**Database**	**Word Processing**
4	Distinction			
5	Merit			
6	Pass			
7	Fail			
8	Total Students			

Table 3.13

3. Enter formulas to link to the relevant cells in the *Spreadsheets Results*, *Database Results* and *Word Processing Results* worksheets.
4. Apply the cell styles listed in Table 3.14.

Range of Cells	Cell Style
A1	Title
B3:D3, A8:D8	Accent1
A4:D7	20% Accent1

Table 3.14

5. Save the spreadsheet as **Computer Applications Results**.

Linking Data in Worksheets Assignment Three

Part 1: Create the 0745 worksheet

1. Create a new spreadsheet workbook and enter the data shown in Table 3.15 in Sheet1.

Weekdays can be copied using the Fill Handle. Enter Monday and drag the Fill Handle downwards to enter the remaining days. This only works when the days are in sequence.

	A	B	C	D	E	F	G	H
1	**Week 1 Ticket Sales**							
2	**Galway–Dublin departing 07:45**							
3								
4		**Galway**	**Athenry**	**Ballinasloe**	**Athlone**	**Tullamore**	**Portarlington**	**Kildare**
5	Monday	233	48	64	104	96	71	180
6	Tuesday	172	23	39	81	95	57	148
7	Wednesday	130	18	36	72	81	59	137
8	Thursday	163	18	35	71	80	47	152
9	Friday	220	21	51	81	100	75	180
10								
11	**Total Ticket Sales**	▨	▨	▨	▨	▨	▨	▨
12								
13	**Grand Total**	▨						

Table 3.15

2. Rename Sheet1 as *0745*.

3. Calculate total ticket sales at each station.
4. Calculate the grand total for ticket sales.
5. Apply the cell styles listed in Table 3.16.

Range of Cells	**Cell Style**
A1	Title
A2	Explanatory
A4:H4, A11, A13	Accent1
A5:H9, B11:H11, B13	20% Accent1

Table 3.16

Part 2: Create the 1100 worksheet

1. Rename Sheet2 as *1100*.
2. Enter the data shown in Table 3.17 in the worksheet named *1100* (or copy and edit the *0745* worksheet).

	A	B	C	D	E	F	G	H
1	**Week 1 Ticket Sales**							
2	**Galway–Dublin departing 11:00**							
3								
4		**Galway**	**Athenry**	**Ballinasloe**	**Athlone**	**Tullamore**	**Portarlington**	**Kildare**
5	Monday	65	12	20	34	28	20	45
6	Tuesday	49	6	18	28	30	18	31
7	Wednesday	34	4	13	22	25	16	30
8	Thursday	42	5	10	18	23	18	34
9	Friday	81	4	13	23	29	19	40
10								
11	**Total Ticket Sales**							
12								
13	**Grand Total**							

Table 3.17

3. Calculate total ticket sales and grand total as before.
4. Apply the cell styles listed in Table 3.16.

Part 3: Create the 1510 worksheet

1. Rename an empty worksheet as *1510*.
2. Enter the data shown in Table 3.18 in the worksheet named *1510* (or copy and edit the *1100* worksheet).

	A	B	C	D	E	F	G	H
1	**Week 1 Ticket Sales**							
2	**Galway–Dublin departing 15:10**							
3								
4		**Galway**	**Athenry**	**Ballinasloe**	**Athlone**	**Tullamore**	**Portarlington**	**Kildare**
5	Monday	56	15	12	15	28	25	50
6	Tuesday	43	5	6	10	30	20	45
7	Wednesday	31	6	2	12	25	22	37
8	Thursday	25	8	8	8	23	15	42
9	Friday	34	10	10	20	29	35	67
10								
11	**Total Ticket Sales**	▨	▨	▨	▨	▨	▨	▨
12								
13	**Grand Total**	▨						

Table 3.18

3. Calculate total ticket sales and grand total as before.
4. Apply the cell styles listed in Table 3.16.

Part 4: Create the Summary worksheet

1. Rename an empty worksheet as *Weekly Ticket Sales*. *(Insert a new worksheet if necessary.)*
2. Enter the data shown in Table 3.19 in the worksheet named *Weekly Ticket Sales*.

	A	B	C	D	E	F	G	H
1	**Week 1 Ticket Sales Summary**							
2	**07:45, 11:00 and 15:10 Trains**							
3								
4		**Galway**	**Athenry**	**Ballinasloe**	**Athlone**	**Tullamore**	**Portarlington**	**Kildare**
5	Monday	▨	▨	▨	▨	▨	▨	▨
6	Tuesday	▨	▨	▨	▨	▨	▨	▨
7	Wednesday	▨	▨	▨	▨	▨	▨	▨
8	Thursday	▨	▨	▨	▨	▨	▨	▨
9	Friday	▨	▨	▨	▨	▨	▨	▨
10								
11	**Total Ticket Sales**	▨	▨	▨	▨	▨	▨	▨
12								
13	**Grand Total**	▨						

Table 3.19

3. Calculate total weekly ticket sales for each day at each station using linking formulas to add data from the *0745*, *1100* and *1510* worksheets.
4. Calculate total ticket sales and grand total as before.
5. Apply the cell styles listed in Table 3.16.
6. In the *0745* worksheet, change Monday tickets to Galway to 270.

   √ Verify the following in the *0745* worksheet:
   ☐ Total ticket sales for Galway is now 955.
   ☐ Grand total is now 3275.

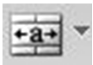
   √ Verify the following in the *Weekly Ticket Sales* worksheet:
   ☐ Monday's total for Galway is now 391.
   ☐ Total ticket sales for Galway is now 1415.
   ☐ Grand total is now 5011.
7. Save the spreadsheet as **Ticket Sales Galway–Dublin Route**.

CHAPTER 3 SUMMARY

1. Basic Concepts

Workbook	An Excel spreadsheet file is called a workbook.
Worksheet	By default, each Excel workbook consists of three worksheets. A worksheet is similar to a page in a copybook. Typically, you go on to a new worksheet once you have filled up the screen with data in the first worksheet. If you run out of worksheets, more worksheets can easily be added to the workbook.
Linking Formula	When data has been entered in multiple worksheets, linking formulas can be used to read data from other worksheets (e.g. =*Sales!D9*) or to perform calculations across multiple worksheets (e.g. =*Sales!F20* – *Costs!H32*). As well as referring to cells, linking formulas also refer to worksheet names.

Formatting

Cell Styles	The Cells Styles option allows you to apply consistent formatting throughout your worksheets. Cell Styles
Merge and Center	Merges highlighted cells into one big cell and centres the data in this cell. 

2. Potential Pitfalls

- When creating a linking formula that calculates across multiple worksheets, always press Enter to complete the formula. Students often click back into the worksheet containing the linking formula instead of pressing Enter. This causes an error in the linking formula.

3. Useful Shortcut

Keyboard Combination	Action
SHIFT + F11	Inserts a new worksheet.

Table 3.20

LINKING DATA IN WORKSHEETS REVIEW QUESTIONS

Answers to the review questions are available on www.gillmacmillan.ie.

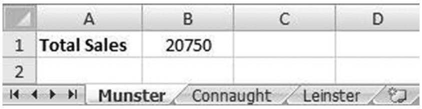
1. By default, each spreadsheet ______________ consists of three ________________.

2. Identify the errors in the following linking formula.

   =StockC20 + PurchasesD15

   ____

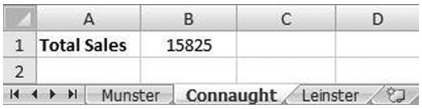
3. Figures 3.16, 3.17 and 3.18 display total sales data from Munster, Connaught and Leinster.



	A	B	C	D
1	**Total Sales**	20750		
2				

Munster Connaught Leinster

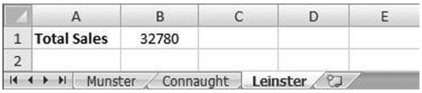
Figure 3.16



	A	B	C	D
1	**Total Sales**	15825		
2				

Munster **Connaught** Leinster

Figure 3.17



	A	B	C	D	E
1	**Total Sales**	32780			
2					

Munster Connaught **Leinster**

Figure 3.18

   Write down the linking formula that will add total sales across the three worksheets.

   ____

4. The maximum number of worksheets in an Excel workbook is limited by

   ____

5. What is wrong with the following linking formula? *=Sales!B4!*

   ____

6. Describe two methods of adding a new worksheet to an Excel workbook.

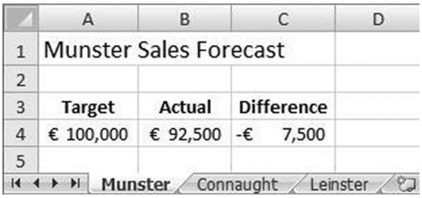
   (i) ____

   (ii) ____

7. Describe the method for changing the tab colour of a worksheet tab.

____

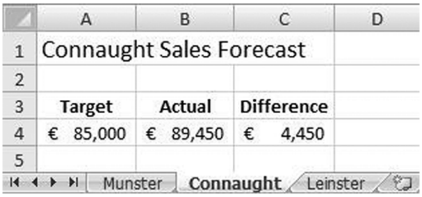
8. Figures 3.19, 3.20 and 3.21 display the difference between target and actual sales in Munster, Connaught and Leinster.



	A	B	C	D
1	Munster Sales Forecast			
2				
3	**Target**	**Actual**	**Difference**	
4	€ 100,000	€ 92,500	-€ 7,500	
5				

Munster
Connaught
Leinster

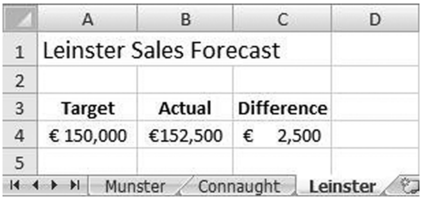
Figure 3.19



	A	B	C	D
1	Connaught Sales Forecast			
2				
3	**Target**	**Actual**	**Difference**	
4	€ 85,000	€ 89,450	€ 4,450	
5				

Munster
Connaught
Leinster

Figure 3.20



	A	B	C	D
1	Leinster Sales Forecast			
2				
3	**Target**	**Actual**	**Difference**	
4	€ 150,000	€152,500	€ 2,500	
5				

Munster
Connaught
Leinster

Figure 3.21

Write down the formula to calculate the total difference for all three provinces.

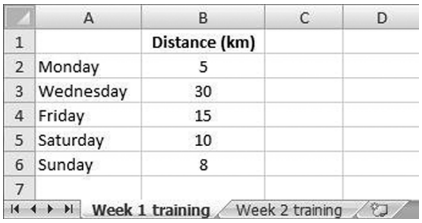
____

9. Describe two methods of renaming a worksheet.

(i) ____

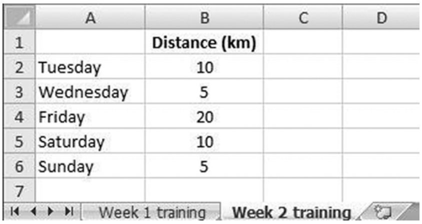
(ii) ____

10. Figures 3.22 and 3.23 display the training completed by a long-distance runner.



	A	B	C	D
1		**Distance (km)**		
2	Monday	5		
3	Wednesday	30		
4	Friday	15		
5	Saturday	10		
6	Sunday	8		
7				

Figure 3.22



	A	B	C	D
1		**Distance (km)**		
2	Tuesday	10		
3	Wednesday	5		
4	Friday	20		
5	Saturday	10		
6	Sunday	5		
7				

Figure 3.23

(i) Write down the function or the formula/function combination that calculates the total distance run over the two weeks.

____

(ii) Write down the formula/function combination that adds the longest distance run in week 1 to the longest distance run in week 2.

____

(iii) Write down the function that calculates the average distance run over the two weeks.

____