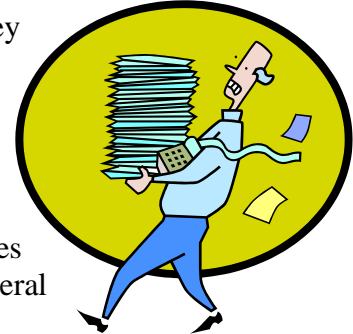




Using Microsoft Excel

Working with Sheets

Files in Microsoft Excel are referred to as **Workbooks**. This is because they can contain more than one sheet. The number of sheets a workbook can contain is only limited by your computer's memory. Having several sheets in a workbook makes it possible to have several similar tables with different data. For example a business wanting to keep track of sales data could have a sheet for each month of the year and then create a thirteenth sheet that adds up the totals from each month. Having the tables on separate sheets is a lot neater and easier to work with than having several tables all cluttering up the same sheet.



The exercises below will look at the use of features such as **Grouping Sheets**, **Linking Sheets** and **Sheet Protection**. Here is a brief description of these skills.

- Grouping Sheets** Grouping sheets allows you to edit several similar sheets at once.
- Linking Sheets** Create formulas that connect data from two or more sheets.
- Sheet Protection** Restrict your worksheet so that only certain parts may be modified.

Excellent!



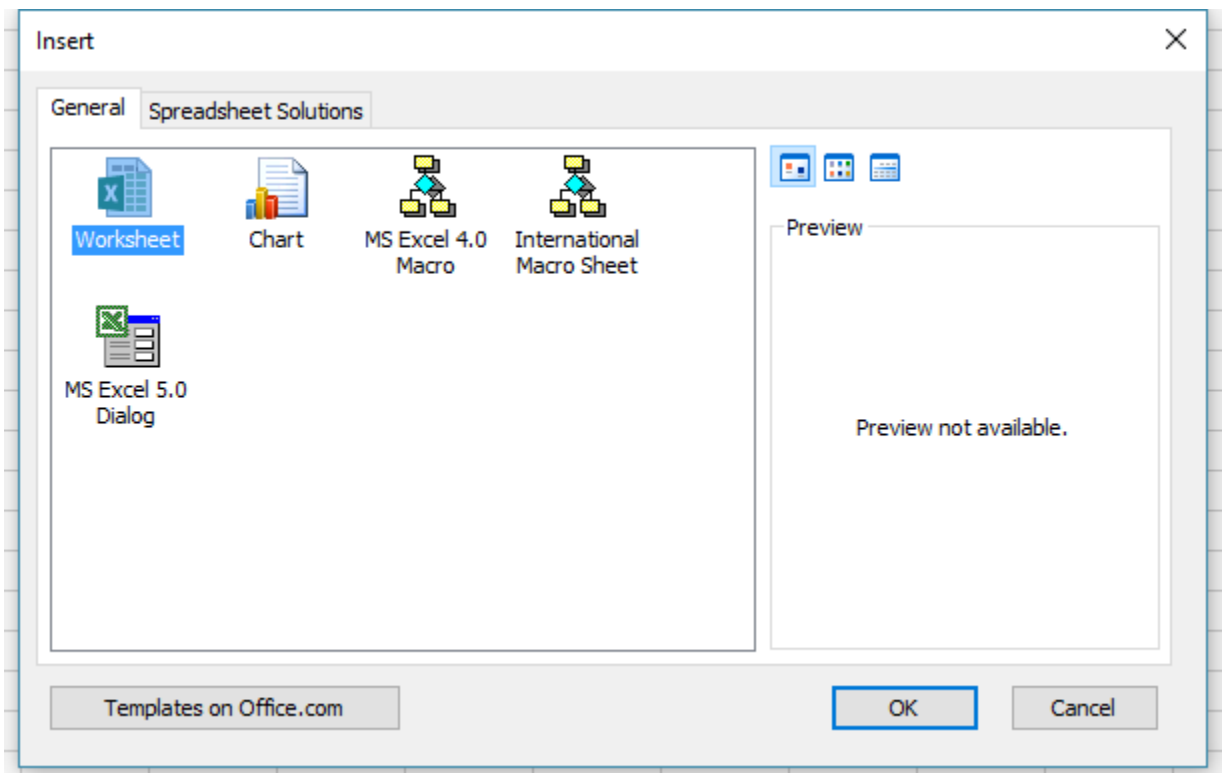
Exercise 1. Creating Extra Sheets

- 1) Make sure Excel is open with a blank workbook ([Ctrl] [N] for a blank workbook). By default a new workbook will contain 3 sheets.

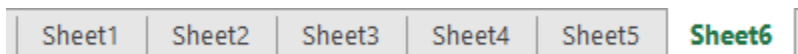
Currently your workbook will have a single sheet (older versions of Excel typically created a new workbook with 3 sheets).



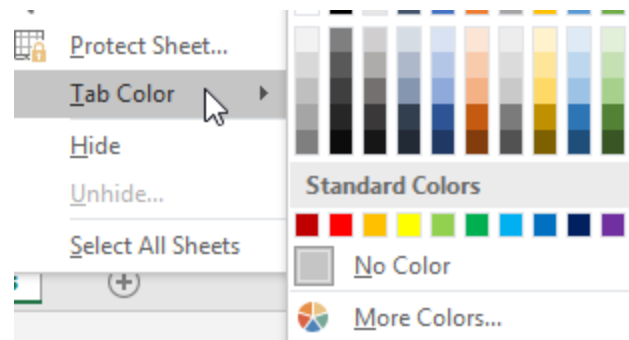
- 2) Click the **New Worksheet** icon (+) next to the last sheet tab (or press [Shift] [F11]). A new worksheet (probably titled Sheet2) will be added to the workbook.
- 3) Right click on any sheet tab and select **Insert**. An **Insert Dialog** will appear.



- 4) Make sure **Worksheet** is selected and click **OK**. Another new worksheet will be added.
- 5) Use either of the above methods to create additional worksheets until you have 6 sheets.



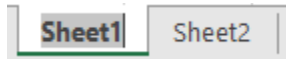
Tip You can change the colour of sheet tabs by right-clicking on a tab and selecting **Tab Color**.



Exercise 2. Renaming Sheets

- 1) Make sure the first sheet is selected (it doesn't matter what number is on it or which order the numbers are in).
- 2) **Right-click** on the name of the sheet and select **Rename** from the shortcut menu.

The name of the sheet will be highlighted so it can be changed.



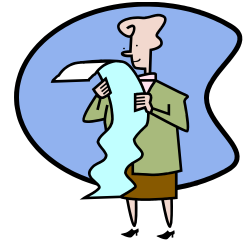
- 3) Type *Jackson* for the name of the sheet and then press **[Enter]** or click away from the tab.
- 4) Double-click on the second sheet tab and enter *Hawkins* as the name.
- 5) Rename the rest of the sheets so they appear as shown below.



Tip If you want to change the number of sheets that are created with a new workbook, select **File, Options** and then select the **General** category. You can then set the number of sheets a new workbook will have.

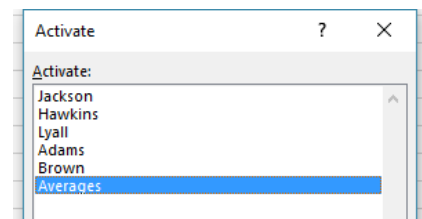
Exercise 3. Navigating Sheets

In the current workbook, there is only a small number of sheet tabs. On a workbook with more sheets, the tabs may not all fit in the bottom area of the screen. When that is the case, you can use the sheet navigation buttons to view the tabs that won't fit. These are located to the left of the sheet tabs as shown below.



You can also navigate through worksheets in other ways.

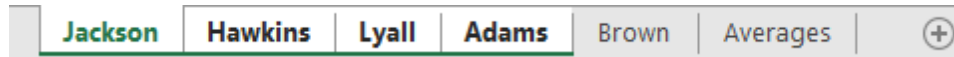
- 1) **Right-click** on the sheet navigation buttons to the left of the sheet tabs. A list of sheet names will appear. Click on one of the sheet names to move to that sheet. When there are too many sheet tabs to fit along the bottom, this can be a quick way to select sheets.



Exercise 4. Grouping Sheets

In our current workbook, we will be creating several sheets that will contain statistics about basketball players. Each sheet will have the same headings, formatting and formulas so we can save time by editing them all at once. This is done by grouping the sheets.

- 1) Click on the first sheet tab to select it.
- 2) Hold down the **[Shift]** key and click on the fourth sheet to select it. All of the sheets in between will become selected.



Whenever more than one sheet is selected, the word **[Group]** will appear next to the filename in the title bar to indicate that you are working in group mode.

A screenshot of the Excel title bar. The text in the title bar is 'Sheet1 - Group - Excel', where the word 'Group' is highlighted in a dark green background, indicating that multiple sheets are selected.

You can also use the **[Ctrl]** key to select or deselect sheets.

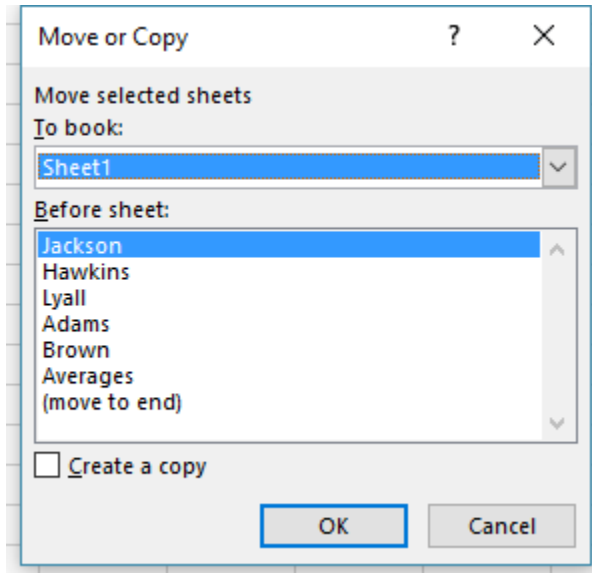
- 3) Hold down **[Ctrl]** and click on the last sheet to select it.
- 4) Hold down **[Ctrl]** and click on one of the already selected sheets to deselect it.
- 5) Click on an unselected sheet without holding down any key to select that sheet alone and deselect all others.
- 6) Right click on any sheet tab and choose **Select All Sheets** to group all sheets.
- 7) Right click on any sheet tab and choose **Ungroup Sheets** so that only one sheet is selected.
- 8) Save the workbook as *Panthers Basketball Club*.

Note When you have more than one sheet grouped, changes you make to cells in one of those sheets will affect all of them. Grouping sheets allows you to edit several sheets at once we will do in a moment.

Exercise 5. Moving and Copying Sheets

You can copy existing sheets or change their order in a couple of ways.

- 1) Right click on a sheet tab and then select **Move or Copy**. A dialog like the one below will appear.



This allows you to move sheets within the current workbook or to another workbook. You can tick the option at the bottom to copy instead of moving. In most cases it is quicker and easier to copy and move sheets within the same workbook using your mouse.

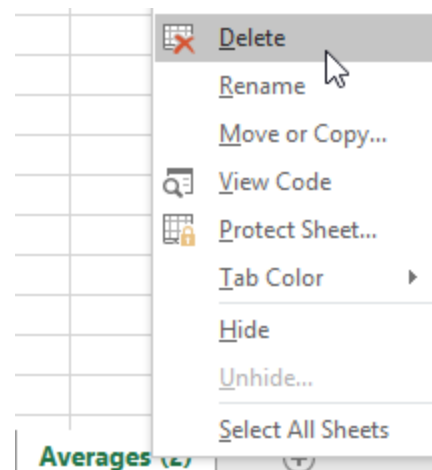
- 2) **Cancel** the **Move or Copy** dialog.
- 3) Move your mouse over the *Adams* sheet tab. Drag it between the *Hawkins* and *Lyall* tabs to move it to that position.
- 4) Move your mouse over the *Averages* tab. Hold down the **[Ctrl]** key and drag to the right. A **+** sign will appear next to your mouse pointer indicating that you are making a copy instead of moving the sheet. Release your mouse button to create a copy of the sheet in that position.



We don't actually need an extra sheet at the moment so we'll get rid of it.

- 5) Right click on the extra sheet tab and select **Delete**.

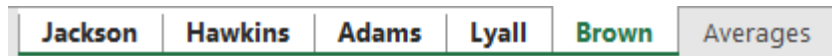
Note The **Undo** feature won't work with deleted sheets. Once they are deleted you can't get them back.



Exercise 6. Editing Grouped Sheets

- 1) Group all of the sheets in the workbook except for the Averages sheet, using any of the methods you have learned.

All of the selected sheet tabs should be highlighted. While the sheets are grouped, it doesn't matter which of the grouped sheets we are editing as the changes will be made to all of the sheets at the same time.



- 2) Create a table similar to the one below with formatting of your choice.

	A	B
1	Panthers Basketball Club	
2	<i>Starting 5 Season Stats</i>	
3	Player Name	
4	Position	
5	Height (cm)	
6	Weight (kg)	
7	Games Played	
8	Points Per Game	
9	Field Goal %	
10	Foul Shot %	
11	2 Point %	
12	Rebounds	
13	Blocks	
14	Steals	
15	Turnovers	

- 3) Ungroup the sheets when you are done.
- 4) Click on any of the sheet tabs. You will see that the table will be on all except the averages sheet.
- 5) Save the workbook with a suitable filename and location.
- 6) Add data to the tables on each of the sheets so that they are like the ones shown below.

Panthers Basketball Club**Starting 5 Season Stats**

Player Name	L Jackson
Position	Centre
Height (cm)	203
Weight (kg)	113
Games played	13
Points Per Game	8.2
Field Goal %	43.2
Foul Shot %	53.1
3 Point %	25
Rebounds	74
Blocks	15
Steals	7
Turnovers	22

Panthers Basketball Club**Starting 5 Season Stats**

Player Name	J Hawkins
Position	Forward
Height (cm)	199
Weight (kg)	95
Games played	13
Points Per Game	14.9
Field Goal %	44.1
Foul Shot %	70.9
3 Point %	33.8
Rebounds	83
Blocks	8
Steals	15
Turnovers	21

Panthers Basketball Club**Starting 5 Season Stats**

Player Name	T Adams
Position	Forward
Height (cm)	205
Weight (kg)	89
Games played	12
Points Per Game	13.5
Field Goal %	42.8
Foul Shot %	67.3
3 Point %	31.5
Rebounds	75
Blocks	10
Steals	13
Turnovers	18

Panthers Basketball Club**Starting 5 Season Stats**

Player Name	B Lyall
Position	Guard
Height (cm)	172
Weight (kg)	77
Games played	13
Points Per Game	17.3
Field Goal %	46.8
Foul Shot %	71.2
3 Point %	35.3
Rebounds	8
Blocks	2
Steals	33
Turnovers	48

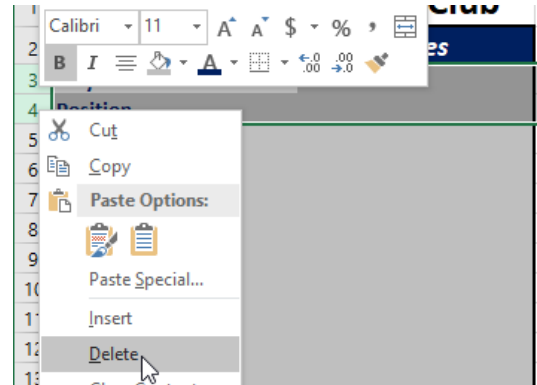
Panthers Basketball Club**Starting 5 Season Stats**

Player Name	A Brown
Position	Guard
Height (cm)	184
Weight (kg)	86
Games played	11
Points Per Game	16.2
Field Goal %	44.6
Foul Shot %	69.3
3 Point %	33.5
Rebounds	5
Blocks	1
Steals	28
Turnovers	41

Exercise 7. Linking Sheets

When you have more than one sheet, it is possible to create a formula that will link several sheets together. With our workbook we will create a table that displays averages based on information in the other 5 sheets. We could do exactly the same thing using any other calculations such as sum or count.

- 1) Create a table like the one below on the *Averages* sheet (Hint – you can copy most of it from one of your other sheets and modify as needed).
- 2) This sheet has no *Player Name* and *Position* row. If you copied your table from the other sheets you can easily delete these rows. Select both rows and then right click on the selected row numbers.
- 3) Select **Delete** from the shortcut menu.



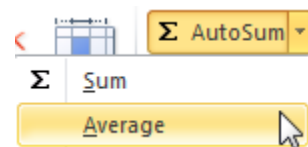
Note Deleting rows like this will remove everything from those rows, including anything that may have been far to the right off the screen.

	A	B
1	Panthers Basketball Club	
2	Starting 5 Player Averages	
3	Height (cm)	
4	Weight (kg)	
5	Games Played	
6	Points Per Game	
7	Field Goal %	
8	Foul Shot %	
9	2 Point %	
10	Rebounds	
11	Blocks	
12	Steals	
13	Turnovers	

- 4) Click in the cell for player height (cell **B3**).
- 5) Begin creating an average function by entering `=AVERAGE(`

Remember that you can use the **AutoSum** icon on the ribbon to create average functions as well if you don't feel like typing it.

You can use the mouse to select cells in other sheets for your formula to refer to, the same as you would for cells on the same sheet.



- 6) Click on the *Jackson* sheet tab. The formula will add the sheet name followed by an exclamation mark to indicate a sheet reference. `=AVERAGE(Jackson!)`.
- 7) Click the **Height** cell for *Jackson*. The formula should now show `=AVERAGE(Jackson!B5`
- 8) Type a comma to indicate that we will be adding an extra cell to our average function.

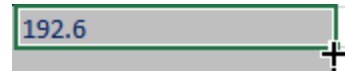
- 9) Click the *Hawkins* sheet tab and then select the height cell for Hawkins.
- 10) Add the height cells for each of the other sheets until the formula looks like the one below and press **[Enter]** to complete the formula. Don't forget to place a comma after you click on each cell before trying to click on the next one.

=AVERAGE(Jackson!B5,Hawkins!B5,Adams!B5,Lyall!B5,Brown!B5)

The average of all of those cells will now be displayed. Although each of the cells referred to are on separate sheets, we can still take advantage of relative referencing to copy the formula so that it creates averages for the rest of the statistics.

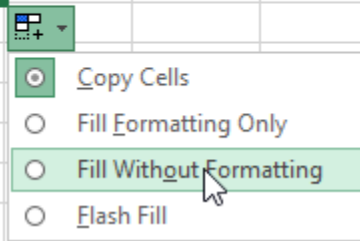
- 11) With the average cell selected, move your mouse over the fill handle.

Double click on the fill handle to copy the formula down to the end of the table.



Relative references will ensure that each cell's averages refer to the cells below the previous one. Copying the function down will most likely copy the formats as well. If this results in your border formatting being changed, you can use the smart tag in the last cell to make sure that cell contents are copied without the formatting.

10	Rebounds	49
11	Blocks	7.2
12	Steals	19.2
13	Turnovers	30
14		
15		
16		
17		
18		
19		



Exercise 8. Using the Consolidate Tool

If you want to create a sheet which summarises information from several similar sheets, a quick way to do it is to use the Consolidate tool. The method we have already used for linking cells is suitable when only a few linked cell references are needed. When a large range of cells in different sheets need to be added, averaged, counted etc it can be easier to use the method shown below. We will create another sheet that averages the player's statistics using the Consolidate tool.

- 1) Create a new sheet in your workbook and call it *Consolidation*.
- 2) Create headings on this sheet as shown below.

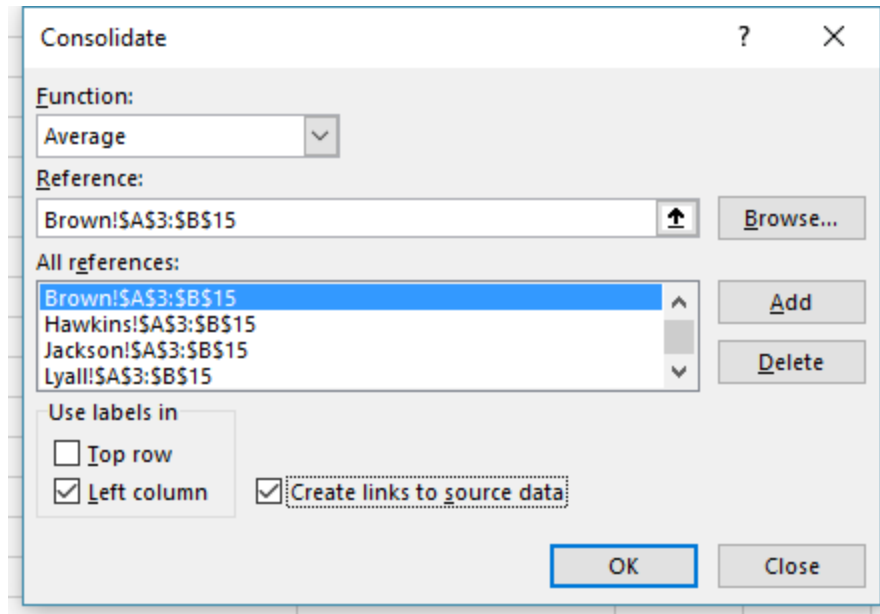
	A	B
1	Panthers Basketball Club	
2	Starting 5 Player Averages	

- 3) Select cell **A3**.
- 4) From the **Data** tab on the **Ribbon** click the **Consolidate** icon. The following dialog will appear.



- 5) Change the **Function** from **Sum** to **Average**.
- 6) Click in the **Reference** box. Now it's time to select which cells on each sheet will be consolidated.
- 7) Click on the *Jackson* sheet tab. The Consolidate dialog will still remain visible allowing you to select the cells you need.
- 8) Select cells **A3** to **B15** on the Jackson sheet. These cells should contain all of the player's stats along with the labels. The reference box should show *Jackson!\$A\$3:\$B\$15*.
- 9) Click **Add** to add the cell range to the **All references** list.
- 10) Click on the *Hawkins* sheet tab. The sheet name in the **Reference** box will change to *Hawkins* so that the reference appears as *Hawkins!\$A\$3:\$B\$15*. Click the **Add** button to add the reference.

- 11) Do the same to add the statistics for the other 3 players' sheets.
- 12) Click the check box for **Use labels in Left column** to select it. This will ensure that the information in the first column will be recognised as labels rather than as part of the data.
- 13) Click the check box next to **Create links to source data** to select it. This will ensure that functions are used to create the averages so that they will update when the source data changes.
- 14) Make sure that the options look like the example below.



- 15) When you are happy with the selections click **OK**.


Click in any of the average cells and you will see regular average functions have been created. One difference with using this method is that an outline is created. This can be expanded to show the individual data from each sheet. If you click on one of these expanded cells, such as C7, you will see a formula that links to the original data, such as `=Hawkins!B5`.

	A	B	C
1	Panthers Basketball Club		
2	<i>Starting 5 Player Averages</i>		
3	Player Name		
4	Position		
5	Panthers Basketball Clu		205
6	Panthers Basketball Clu		184
7	Panthers Basketball Clu		199
8	Panthers Basketball Clu		203
9	Panthers Basketball Clu		172
10	Height (cm)		192.6
16	Weight (kg)		92
22	Games Played		12.4

- 16) Click in some of the different cells to view the formulas that have been created by the Consolidation tool.
- 17) Save the changes to the file.

Note You can also link to other Excel workbooks. The example below shows how a formula linking to another workbook might appear.

=[Functions.xlsx]Functions!\$C\$9



File name. If the file is not saved in the same folder the full path may be needed. E.g. [C:\Documents\Spreadsheets\Functions.xls]

Sheet name

Cell reference

Exercise 9. Worksheet Protection

A worksheet can be protected so that only certain cells can be edited. Protecting a workbook involves a couple of steps. By default, all cells in a sheet are locked but sheet protection is not turned on. First of all you need to specify which cells will be unlocked (available for editing). Then you can enable sheet protection. Additionally, you can select the hidden option for cells so that any formula used to create the data in that cell will not be visible.




- 1) Group all 5 of the player sheets using any method shown earlier.



- 2) Select all of the cells that you want users of the sheet to be able to edit. The following example shows **B3:B15** selected.

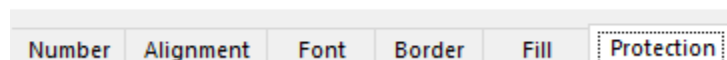
	A	B
1	Panthers Basketball Club	
2	<i>Starting 5 Season Stats</i>	
3	Player Name	L Jackson
4	Position	Centre
5	Height (cm)	203
6	Weight (kg)	113
7	Games Played	13
8	Points Per Game	832
9	Field Goal %	43.2
10	Foul Shot %	53.1
11	2 Point %	25
12	Rebounds	74
13	Blocks	15
14	Steals	7
15	Turnovers	22

- 3) Display the **Format Cells** dialog using one of the following methods

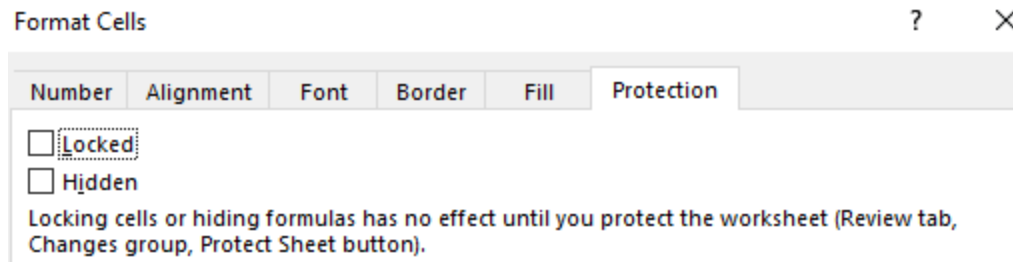
- From the **Home** tab on the **Ribbon**, click the **Format** icon, then click  **Format Cells...** 
- From the **Home** tab, click the  icon in the bottom corner of the **Font**, **Alignment** or **Number** group.
- Press **[Ctrl] [1]**.

- 4) Click on the **Protection** tab.

Format Cells



5) Click the **Locked** checkbox to clear it so that these cells will be unlocked.



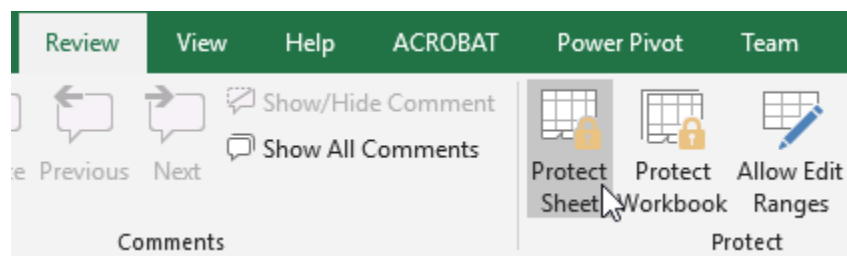
6) Click **OK**. All cells are locked by default but sheet protection is not enabled by default. When sheet protection is enabled, only the cells that are not locked can be edited.

Note If you enable the hidden option, the contents of the cell will be visible on the sheet, but not in the formula bar. This means that the results of a formula will be seen on the sheet but it will not be possible to see the formula itself while sheet protection is turned on.

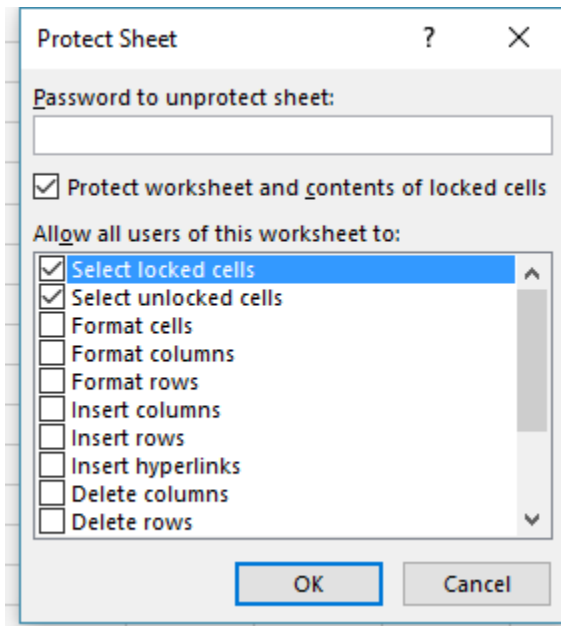
Before you can enable sheet protection you will need to ungroup the sheets, since you can only protect one sheet at a time.

7) Ungroup the sheets and make sure one of the player sheets is still selected.

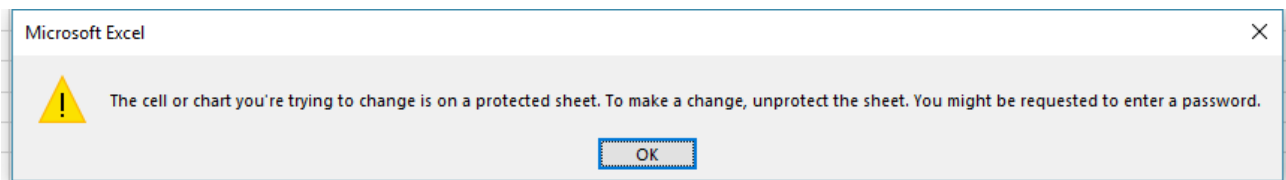
From the **Review** tab on the **Ribbon** click the **Protect Sheet** icon. You can also right-click on a sheet tab to access the **Protect Sheet** options.



The Protect Sheet options allow you to enter a password. If you provide a password here, then the sheet can't be unprotected without using that same password. You can leave it blank if you want to allow protection to be turned off without a password. The other options provide control over what can and can't be modified when the sheet is protected.



- 8) Enter a password if you want to use one or leave it blank, then click **OK** to turn on the sheet protection.
- 9) Try to change one of the cells you unlocked. You'll be able to change it as normal.
- 10) Try to change one of the other cells and a message like the one below will appear.



- 11) Click **OK** to close the message.
- 12) Protect the other player sheets and save the file.

Note Worksheet passwords can be up to 255 characters and they are case sensitive. **Don't forget your password** if you use one.

Tip In addition to protecting sheets, you may have also noticed a protect workbook option. Protecting a workbook can prevent users from doing things like moving, creating, copying, renaming or hiding worksheets.