⊠ Using Microsoft Excel

About Excel

What is a Spreadsheet?

Microsoft Excel is a program that's used for creating spreadsheets.
So what is a spreadsheet?
Before personal computers were common, "spreadsheet" referred to
large sheets of lined paper, which were used by people in various businesses to record facts and figures in rows and columns, and then make calculations based on the information.
When personal computers first began appearing, one of the first applications was a program released in 1979 called VisiCalc. It was used as a tool for performing spreadsheet style calculations that would have been to difficult to do on a calculator. The program quickly became so popular that people began buying personal computers for their businesses just so they could use VisiCalc.

VisiCalc

Since then, many other spreadsheet programs have been popular over the years, such as Quattro Pro and Lotus 123. Microsoft Excel was first released in 1985 with newer versions being released every couple of years. The most recent version is Excel 2003 (version 11).

How Do Spreadsheets Work?

Computer spreadsheets are based on their old paper formats. A spreadsheet on a computer uses rows and columns to record information such as text and numbers, such as the example below.

Graduates from University							
	1996	1997	1998	1999	2000	2001	Total
Nursing	3,982	3,999	4,012	4,350	3,330	3,500	23,173
Law	5,001	5,330	4,998	5,200	5,120	5,101	30,750
Art	1,060	1,870	1,509	1,777	1,670	1,830	9,716
Science	2,646	2,300	2,100	2,222	3,100	1,998	14,366
Music	480	390	389	410	376	296	2,341
Total Graduates	13,169	13,889	13,008	13,959	13,596	12,725	80,346
Average	2,634	2,778	2,602	2,792	2,719	2,545	16,069
Minimum	480	390	389	410	376	296	2,341
Maximum	5,001	5,330	4,998	5,200	5,120	5,101	30,750

One major benefit of using computers for spreadsheets is that the computer can do a lot of the hard work for you. For example, in the table above, the computer could be told to automatically work out the summary amounts such as total, average, minimum and maximum.

A spreadsheet program can also create graphs and other types of charts, based on information in your tables. The example below shows a graph that was easily created from the table above.
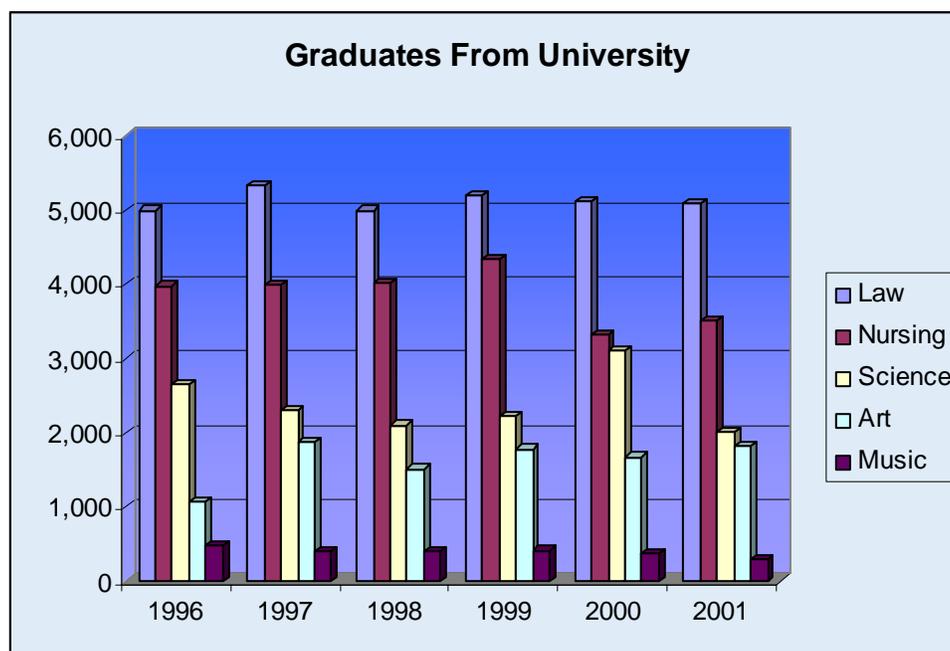
Spreadsheets are often used for business documents such as invoices where numbers and totals are important. A program such as Excel can automatically add up totals for a document such as the invoice shown below. A document like this could be given a customer to provide details of how much money they owe to the business.
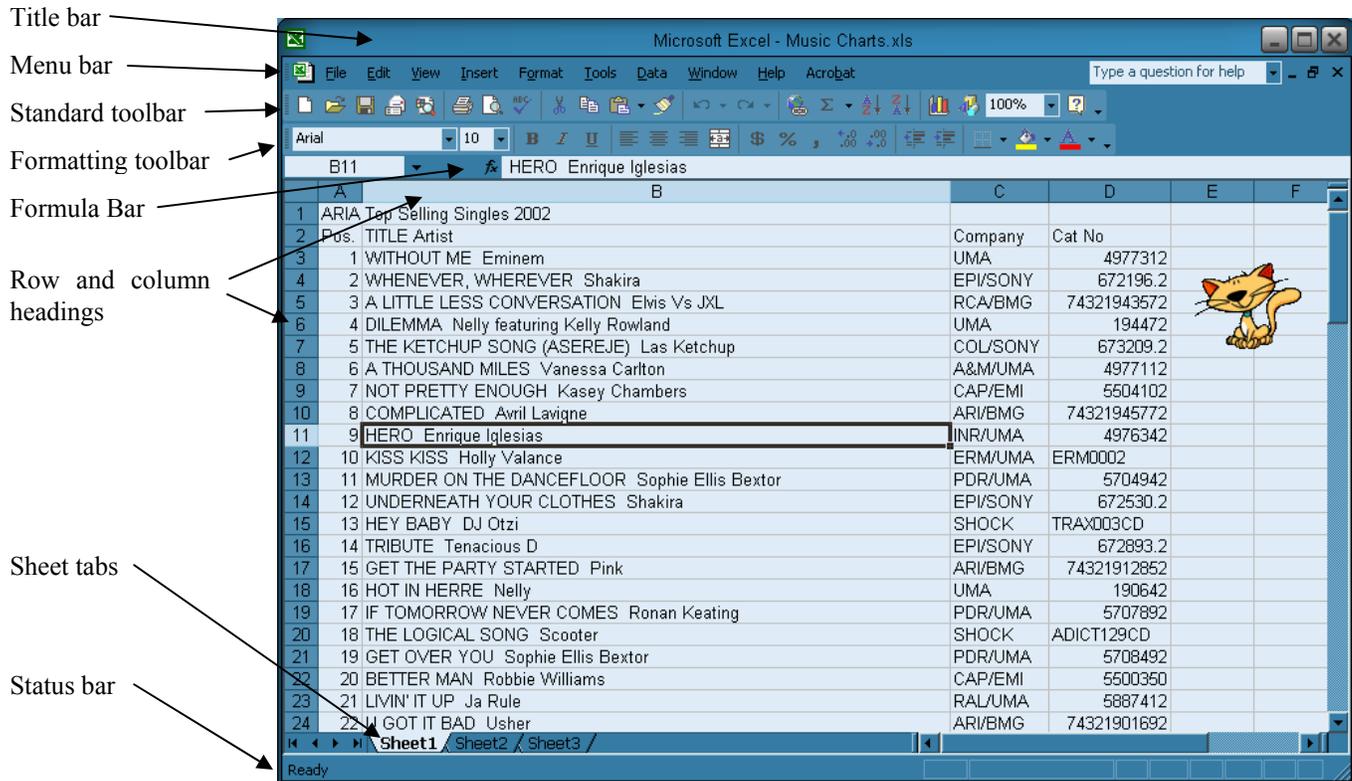

Spreadsheet Contents

The cells in a spreadsheet can contain 3 types of information. Excel will treat cells differently depending on the cell contents.

- Text – Any names or labels that are required on the spreadsheet
- Number – All numerical values including dates/times, percentages and dollar values
- Formula – Formulas are written in a cell to automatically calculate an answer.

Working with Excel

The Excel Screen

Title bar

Menu bar

Standard toolbar

Formatting toolbar

Formula Bar

Row and column headings

Sheet tabs

Status bar

| Title bar	Shows the name of the application and the name of the currently open file
Menu bar	Contains all of the program's menus
Standard toolbar	Provides single click access to common Excel features
Formatting toolbar	Provides single click access to common formatting features
Formula bar	Used to edit the contents of cells on the spreadsheet
Headings	Each column in the spreadsheet has a heading with a letter
	Each row in the spreadsheet has a heading with a number
Sheet tabs	An Excel file can have more than one sheet. These are used for selecting different sheets
Status bar	Shows information based on what you are doing and provides quick access to some features

Exercise 1.   Opening an Existing File

Opening a file in Excel is done the same way as in most other programs. Opening a file can be done in one of the following ways:

- Hold down the **[Ctrl]** key on your keyboard and press **[O]**.
- Click the Open icon on the toolbar (looks like a folder opening).
- From the menu, select **File** and then **Open**.
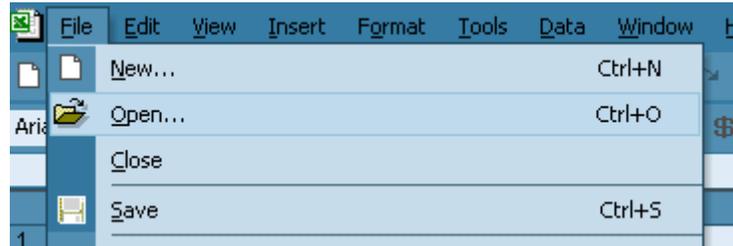
1) Select the **Open** command using one of the above methods. You will see the file open dialog as shown below.
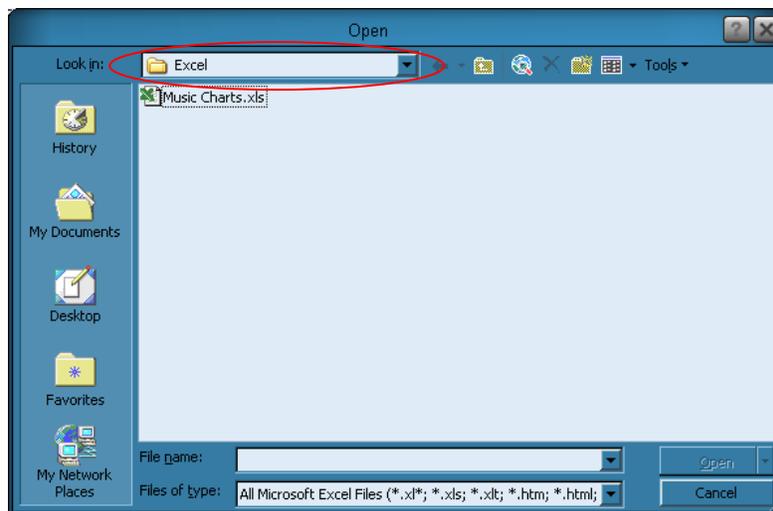
2) Click on the **Look In:** list and select the drive and location that the file is in. Your teacher will tell you where the files are stored.

3) When you have selected the right location, a list of Excel files will appear. Select the file called **Music Charts.xls** and click **Open**. The spreadsheet file will now open in Excel

Components of a file

Each file in Excel is referred to as a Workbook. This is because each file may contain more than one spreadsheet. A new workbook will begin with three blank sheets.

Each sheet contains 65,536 rows and 256 columns. The rectangle areas that make up the rows and columns are referred to as cells.

Moving Around a Workbook

Moving around the workbook can be done with the mouse, with the keyboard or with a combination of the two.

Exercise 2.   Moving around with the mouse

The sheet in front of you will be made up of numerous cells. You can select a particular cell by clicking on it with your mouse. Each cell is referred to by its column letter and then its row number. For example: in the picture shown below, the cell in column **C** and row **7** is selected. This cell would be referred to as cell **C7**.


1) Click on cell **C7** to select it.

You can use the scrollbars to move to sections of the sheet that are off the screen. The scroll bar on the right can be used for moving up and down and the scroll bar at the bottom can be used for moving sideways.

Click the arrows to move one row/column at a time

Drag the scroll boxes to move quickly

Click the blank area on the scrollbar to move one screen at a time
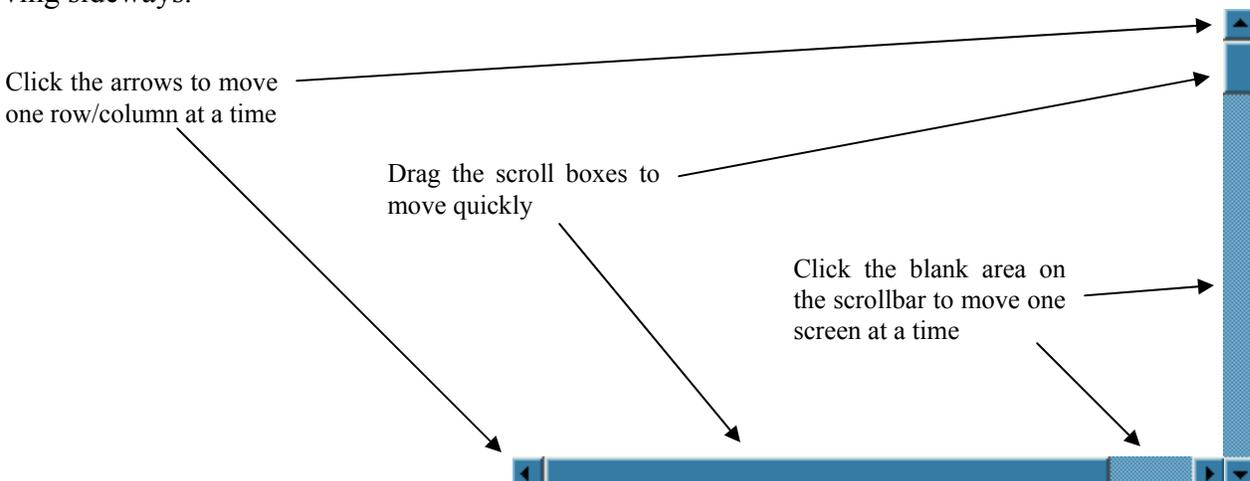
2) Practice using the scrollbars to move around the sheet

Exercise 3.   Moving Around With The Keyboard

1) Hold down the **[Ctrl]** key and press **[Home]**. This will move you to cell **A1**.
2) Press the down arrow ↓ 5 times and press the right arrow → 3 times. You should have cell **96** selected.
3) Press **[Home]**. This will move you to column **A**.
4) Hold down **[Ctrl]** and press the down arrow ↓ to move to the last non-empty cell in that direction.
5) Hold down **[Ctrl]** and press the right arrow → to move to the last non-empty cell in that direction. You should now be on cell **D102**.
6) Press **[Ctrl] [Home]** again and then practice the additional shortcuts listed below.
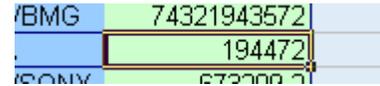
[Page Down]	Move down one screen
[Page Up]	Move up one screen
[Alt] [Page Down]	Move right one screen
[Alt] [Page Up]	Move left one screen

Selecting Cells

When you are working in a spreadsheet, it is important to be able to select cells in the sheet. Some of the more common tasks that can be done when cells are selected are:
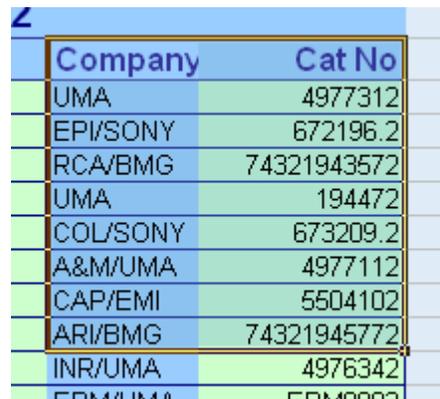
- Format cells (change colours, text sizes etc.)
- Copy and move cells
- Sort information
- Create a graph from the information that's selected

Like many things in Excel, selecting cells can be done with the mouse or with the keyboard. First we'll try selecting cells with the mouse. Make sure the Music Charts file is still open.

Exercise 4.   Selecting by dragging

1) Move your mouse so that it is positioned over cell **82** (the one which says "Company")
2) Click and hold down the left mouse button.
3) With the button still held down, drag the mouse to cell **910** and then release the mouse button.

All of the cells from **82** to **910** should now be selected. Excel refers to this group of cells as **82:910**.

Exercise 5.   Selecting by pointing and clicking

If you are selecting a large range of cells then using the drag method may be difficult. For example, if you tried to select the entire music charts table, you may have a hard time selecting a range of cells that goes off the screen. In these cases, the *point and click* method can be easier.

1) Click on cell **82** to select it.
2) Scroll down so you can see the bottom of the music charts table.
3) Hold down the **[Shift]** key while you click on cell **G102**.

The cells in between will now all be selected.

### Exercise 6.   Selecting with the keyboard

As you have just seen, the **[Shift]** key can be helpful with selecting cells. Remember the keyboard shortcuts used for moving in the previous section. Holding down **[Shift]** while using any of these shortcuts will select cells as you move over them.

1) Hold down **[Shift]** While pressing the arrows on the keyboard. You will select cells as you move over them, or un-select them as you move back over them.
2) Press **[Ctrl]** and **[Home]** to move to the beginning of the sheet.
3) Hold **[Shift]** and **[Ctrl]** while pressing the down arrow.
4) Hold **[Shift]** and **[Ctrl]** while pressing the right arrow.

The whole table should now be selected.

Exercise 7.   Additional shortcuts for selecting

    1) Click the column heading for column **F**. This will select the entire column.
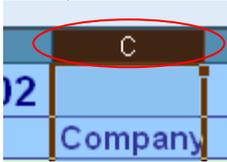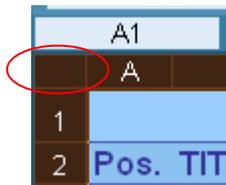
    2) Click the row heading for row **5**. This will select the entire row.

    3) Move your mouse over the column **A** heading. Click and hold your mouse button and then drag to the column **D** heading. Everything in columns **A, B, C** and **D** will now be selected.

    4) Click the button where the row headings and column headings meet. This will select the entire sheet.

    5) Click anywhere inside the table and press **[Ctrl]** and **[Spacebar]**. This will select the entire table. If you do this while you are in a blank cell it will select the column.

    6) Press **[Ctrl] [A]**. This will select the entire sheet.

    7) Use the drag method to select from cell **A2** to cell **D3**. Hold down **[Ctrl]** and select from cell **A6** to cell **D7**. The **[Ctrl]** key allows you to select more than one range of cells at the same time.

Creating a New Spreadsheet File

Exercise 8.   Closing a Workbook

Before creating a new workbook, we'll close the previous one. You can have more than one workbook open at the same time, but too many files open at once can make your computer run slowly.

In the top-right corner of the Excel screen you will see 2 buttons with crosses on them. The top one will close Excel entirely. The bottom one will close the workbook you are working on but Excel will remain open.

← Close the program (you can also press **[Alt] [F4]**)

← Close the workbook (you can also press **[Ctrl] [F4]**)

1) Click the bottom close button, or press **[Ctrl] [F4]** to close the **Music Charts** workbook. If you see a message asking if you want to save changes, click **No**.

Exercise 9.   Creating a new workbook

1) Click the New icon on the toolbar ⬚ or press **[Ctrl] [N]** to create a new blank workbook.

You can also create a new workbook by going to the File menu and selecting New, though this will ask you to choose what type of file you want before creating the workbook.

Exercise 10.   Saving a Workbook

The Save command can be accessed using one of the methods below.

- Go to the File menu and select Save
- Click the Save icon on the toolbar (looks like a floppy disk). 💾
- Press **[Ctrl]** and **[S]**

Use one of the above methods to choose the save command. Because it is the first time you've saved the file, you will be asked to specify a filename and a location.
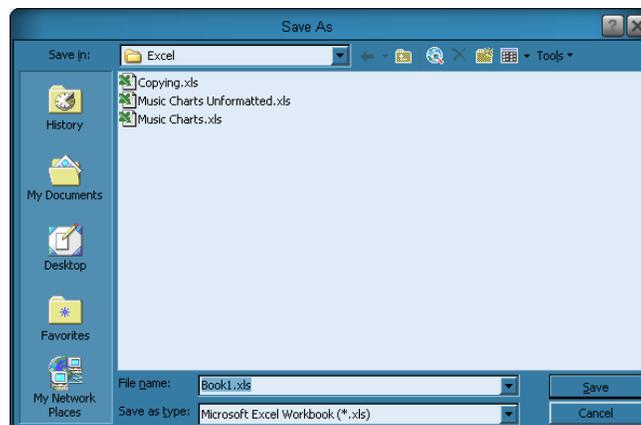
Call the file Grades. Your teacher will tell you where to save it.

Entering information in to the worksheet

1) Make sure you are in cell **A1**. Type your name and press **[Enter]**.

On Excel's normal settings, pressing **[Enter]** will not only complete what you are typing in the cell, it will also move to the cell below. If cell **A2** hasn't already been selected for you, then select it yourself.

2) With cell **A2** still selected, type your age and press **[Enter]**.
3) With **A3** as the selected cell, hold down **[Ctrl]** and press **[;]**. This should place today's date in the cell. Press **[Enter]** to complete entry in that cell.

Notice that the cell with your name is aligned to the left while the others are aligned to the right. This is because text and numbers are treated differently in Excel (a date or time is considered to be a type of number).

Exercise 11.   Editing Cell Contents

1) Select cell **B1** one and enter the following text (including the spelling error).

Easten Goldfields Senior High School

To correct the mistake, we'll need to edit the cell. If you click on the cell and begin typing, all of the text in the cell will be deleted. We need to change to edit mode so we can edit parts of the cell's contents. There are three ways to enter edit mode.

- Double-click on the cell you want to edit
- Press **[F2]** when the cell you want to edit is selected

- Click in the formula bar below the toolbar icons

2) Use one of the above methods to enter Edit mode. A red **x** and a green ✓ will appear to the left of the formula bar.
3) Edit the text in the cell so that *Easten* is changed to *Eastern*.
4) When you have edited the cell contents, press **[Enter]** or click the green tick to complete the changes to the cell contents. If you want to cancel making changes to the contents of a cell, you can press **[Esc]** or click the red cross icon.

Copying and Moving

It's often necessary to copy and move certain parts of your spreadsheet. This can be done using any of the methods explained below.

Cut, Copy & Paste

Using the standard Windows copy & paste features is one of the most common ways to copy and move information in Excel. When you use the *cut* or *copy* features in excel, the information you had selected is copied to an area of Windows known as the *clipboard*. The copy feature will leave the information in its original location so you can make a copy. The cut feature will remove it from its original location so you can move it. You can then choose where the copied, information will go by *pasting* from the clipboard.

Exercise 12.   Copy & Paste

1) Open the file called **Copying**.
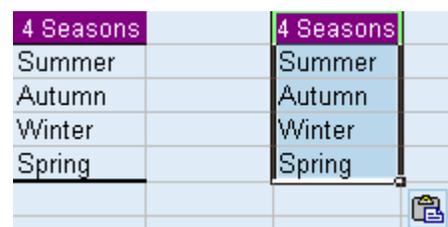2) Select the cells A1 to A5.

To copy the selected information, you can use one of the following methods.

- Go to the **Edit** menu (or right click on the selected cells) and select **Copy**.
- Click the Copy icon on the toolbar which looks like two documents. 📋
- Hold down **[Ctrl]** and press **[C]**.

3) Use one of the above methods to use the copy command. A moving dotted line will appear around the selected cells to indicate they are the ones marked for copying.
4) Click on cell **C1**. This is the beginning of the range we will paste the cells to.

To paste the selected information from the clipboard, you can use one of the following methods.

- Go to the **Edit** menu (or right click on the selected cells) and select **Paste**.
- Click the Paste icon on the toolbar which looks like a clipboard. 📋
- Hold down **[Ctrl]** and press **[V]**.

5) Use one of the above methods to paste from the clipboard. The contents of the cells from **A1:A5** will be copied to **C1:C5**.

When the information is pasted, you will see a *smart tag* appear in the corner of the pasted information (it looks like the paste icon). If you click on that icon, you get a list of options which allow you to make choices about the information that has been pasted, such as whether or not the formatting will match the cells that were copied from or the cells that were copied to. You see smart tags a lot in excel. Pay attention to them. There are some very useful features hidden away in those menus!

Exercise 13.   Cut & Paste

The difference between copy and cut is that the cut feature doesn't leave the original information behind, so it is used for moving.

1) Select the cells **A1** to **A5**.

To cut the selected information, you can use one of the following methods.

- Go to the **Edit** menu (or right click on the selected cells) and select **Cut**.
- Click the Cut icon on the toolbar which looks like a pair of scissors. ✂
- Hold down **[Ctrl]** and press **[V]**.

2) Use one of the above methods to use the cut command. A moving dotted line will appear around the selected cells to indicate they are the ones marked for moving.
3) Click on cell **C1**. This is the beginning of the range we will paste the cells to.
4) Select cell **E1** and use the techniques described in the previous exercise to paste to that location. The contents of the original cells will now be moved to the new location.

Tip	Look on your keyboard and you will notice that the shortcut keys for cut, copy and paste (X, C and V) are all right next to each other and near the **[Ctrl]** key. A quick way to work is to use these shortcuts with your left hand, while your right hand uses the mouse to select the areas to copy and paste.

Exercise 14.   Drag & Drop

Drag & Drop is another method used for copying and moving information.

1) Select cells **E1:E5**.
2) When the cells are selected, there is a black border around the selected cells. Move your mouse over one of the borders and your mouse pointer will change to a white arrow shape.
3) Hold your mouse down and drag to begin moving the cells. A shaded rectangle will indicate where the cells will be moved to. Drag your mouse until the shaded rectangle is over cells **G1:G5**.
4) Release your mouse button to move the contents of **E1:E5** to these cells.

You can also use the drag and drop technique for copying cells. The only difference is that you hold down the **[Ctrl]** key as you're dragging.

1) Select cells **G1:G5**.
2) When the cells are selected, there is a black border around the selected cells. Move your mouse over one of the borders and your mouse pointer will change to a white arrow shape.
3) Hold your mouse down and drag to begin moving the cells. A shaded rectangle will indicate where the cells will be moved to. Drag your mouse until the shaded rectangle is over cells **A8:A12**. While you are dragging, press and hold the **[Ctrl]** key. A **+** sign will appear next to the mouse to indicate that you are copying instead of moving.
4) Release your mouse button to move the contents of **E1:E5** to these cells. Make sure you don't release the **[Ctrl]** key until after you've released the mouse button.
5) Practice using the copy & paste method and the drag & drop method until all of the shaded areas are filled in with seasons.

Exercise 15.   Auto fill

Excel has a feature called Auto fill, which enables the user to easily copy information over a large range of cells at the same time. Make sure the Copy workbook is still open. Like most workbooks, this one has more than one sheet. We will change to the second sheet to practice using the auto fill feature.

1) To change to the second sheet, press **[Ctrl] [Page Down]** or click the tab for sheet 2 at the bottom of the screen. ▶ ▶┃ \ **Sheet1** ⟨ Sheet2 ⟩ She

2) Select cell **A1**. When the cell is selected, you will see a border around the cell that is used for moving cells. In the bottom-right corner of that border, is an area referred to as the fill handle. If you move your mouse over the bottom-right corner, your mouse pointer will change to a small black cross. EGSHS

3) With your mouse pointer still positioned over the fill handle, click and hold the mouse button, then drag downwards. Continue dragging until you have reached cell **A10**.

4) Release the mouse button, and those cells will all be filled with the contents of cell **A1**.

5) Select cell **B1**. Follow the steps above to fill the cells below with the contents of cell **B1**. Excel will recognise this cell as being one of the days of the week, and will fill the other cells with the following days. This uses a feature known as intelligent auto fill.

6) Try the same thing with cell **C1** and you will see that Excel also recognises abbreviated day names.

7) The same also works with month names. Use the fill handle to copy cell **D1** to the cells below, then copy **E1** to the cells below.

8) Use the fill handle to copy **F1** to the cells below and do the same with **G1**

9) In cell **H1** we have not only a month name, but a year as well. Use the fill handle to copy this to the cells below. When the series reaches January, the year will change appropriately.

10) In cell **H1** we have a month name. Use the fill handle to copy it to the cells blow and the series will continue. The contents of cell **H1** may also be a person's name. If this was the case, then we might not want it to change the following cells the months in the year. Try using the fill handle on cell **I1** but this time hold down the **[Ctrl]** key as you drag downwards. This will temporarily disable the intelligent auto fill feature.

11) In other cases, you may want to force Excel to fill intelligently. If you use the auto fill feature on cell **J1**, the cells would all be filled with the number 1. If you hold down **[Ctrl]**, you will be telling Excel to use Auto Fill. Copy cell **J1** downwards while holding down **[Ctrl]**.

12) In column K, we have 2 cells filled in. Select both of those cells (**K1:K2**). If you use the fill handle while 2 cells are selected, Excel will work out the difference between the 2 cells and increase the following cells by the same amount. Try copying downwards using the fill handle. Try doing the same with the 2 months in column **L**.

13) In column **M**, we have a month in addition to the year. When the series reaches January, the year will change. Try copying **M1** down with the fill handle.
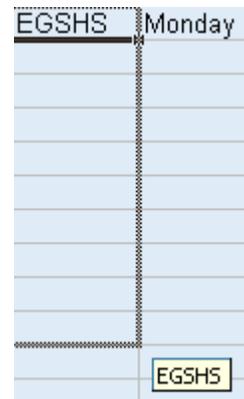
|	A	B	C	D	E	F	G	H	I	J	K	L	M
1	EGSHS	Monday	Mon	January	Jan	Quarter 1	Qtr1	April	April	1	5	February	Oct-03
2	EGSHS	Tuesday	Tue	February	Feb	Quarter 2	Qtr2	May	April	2	10	April	Nov-03
3	EGSHS	Wednesda	Wed	March	Mar	Quarter 3	Qtr3	June	April	3	15	June	Dec-03
4	EGSHS	Thursday	Thu	April	Apr	Quarter 4	Qtr4	July	April	4	20	August	Jan-04
5	EGSHS	Friday	Fri	May	May	Quarter 1	Qtr1	August	April	5	25	October	Feb-04
6	EGSHS	Saturday	Sat	June	Jun	Quarter 2	Qtr2	September	April	6	30	December	Mar-04

14) Save the changes to the file when you are done (🖫 or **[Ctrl][S]**)

Creating a table

Now we'll use what has been covered so far to create a table.

1) Close the workbook that is currently open (✕ or **[Ctrl][F4]**).
2) Open your Grades file if it is not still open (📂 or **[Ctrl][O]**)

To check and see if a workbook is already open, select the **Window** menu. The bottom of the menu will show a list of all the workbooks currently open with a tick next to the workbook you are currently viewing. When more than one workbook is open, you can select a file name from the **Window** menu to switch to that workbook. You can also press **[Ctrl] [F6]** to switch between open workbooks.
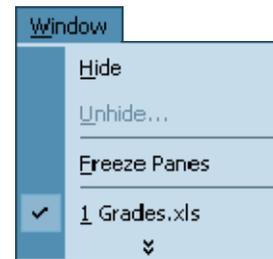
3) Enter the text *Term 1* in cell **B5**.
4) Use the fill handle to copy the contents of that cell over the next three cells as shown below.

Those cells should now be filled in with *Term 2*, *Term 3* and *Term 4*.

5) Complete the list of names in column A as shown below.

6) In cell A15 enter *Class Average*.
7) In cell F5 enter *Year Total*.

8) Enter the numbers shown below.

	A	B	C	D	E	F
1	Joe Bloggs	Eastern Goldfields Senior High School				
2	15					
3	24/11/2003					
4						
5	Student	Term 1	Term 2	Term 3	Term 4	Year Total
6	Jean Picard	15	12	14	17	
7	John Archer	18	14	17	16	
8	James Kirk	23	22	19	21	
9	Chris Pike	8	11	7	6	
10	Jeff Sinclair	19	19	18	14	
11	Katheryn Ja	13	12	10	12	
12	Ben Cisco	16	22	20	19	
13	John Sherric	22	20	24	21	
14	Lita Alexanc	23	21	28	21	
15	Class Average					

9) Save the file after you have made the changes.