



SWANSEA METROPOLITAN UNIVERSITY

PRIFYSGOL FETROPOLITAN ABERTAWE

Excel – Charting Your Data

Charting Your Data

Charts are graphical representations of numeric data. The most commonly used charts fall into one of two categories: pie charts and series charts.

Pie charts

Pie charts show how separate parts make up a whole. For example, a firm may wish to know which months of the year are the most lucrative for sales revenue. The total yearly sales revenue (the whole pie) might be 'sliced up' to show sales in January, February, March, etc. (the slices of the pie).

Series Charts

Series charts allow you to chart more than one data series (sets of numbers for a particular category). This lets you compare the data points in the series. For example, a firm might want to compare sales values of canned goods (in January, February, March, etc.) with sales of fresh produce (in January, February, March, etc.) There are several types of series charts: line, area, bar and column.

Line and Area Charts

- Line charts and area charts are typically used to show one or more variables (sales, income, price) changing over time. An area chart is simply a line chart with the area below the line filled/shaded to emphasise its values.
- Line and area charts share a common layout. The horizontal line is called the x-axis, and the vertical line is the y-axis.

Bar and Column Charts

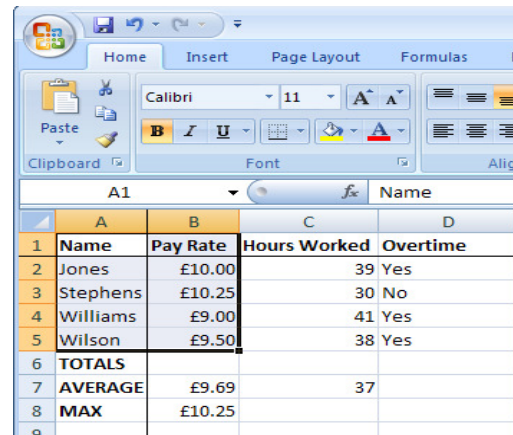
- Unlike area and line charts, a bar chart's axes are turned 90 degrees, so the x-axis is on the left side. Further, the bars give added substance to the chart. In a line chart, the reader notices the trend up or down in each line and the gaps between the lines. A bar chart makes the differences even clearer.
- Column Charts are the same as bar charts but with the x-axis at the bottom (essentially, a bar chart tipped on its side).

Creating easy to use charts

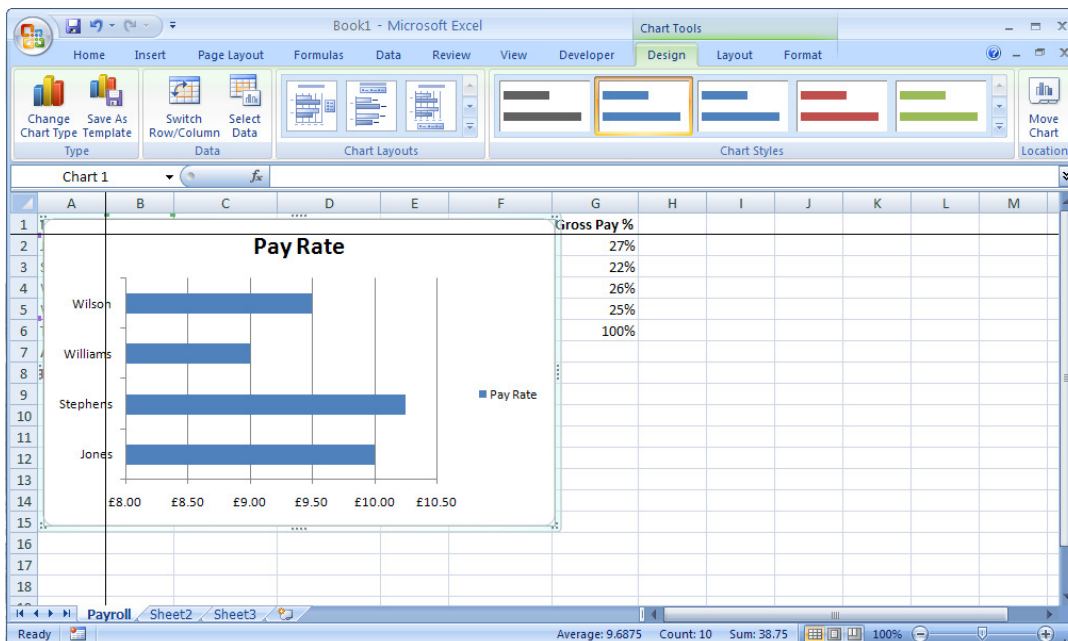
The easiest way to create a chart is by using the Chart Wizard. Begin the charting process by selecting the data to be used in the chart. With the exception of the chart title, everything that appears in the chart will be selected from entries in the worksheet. If you include blank rows or extra empty columns in your selection, you'll have empty spaces in your chart.

We are going to create a bar chart to show the rate of pay for each employee.

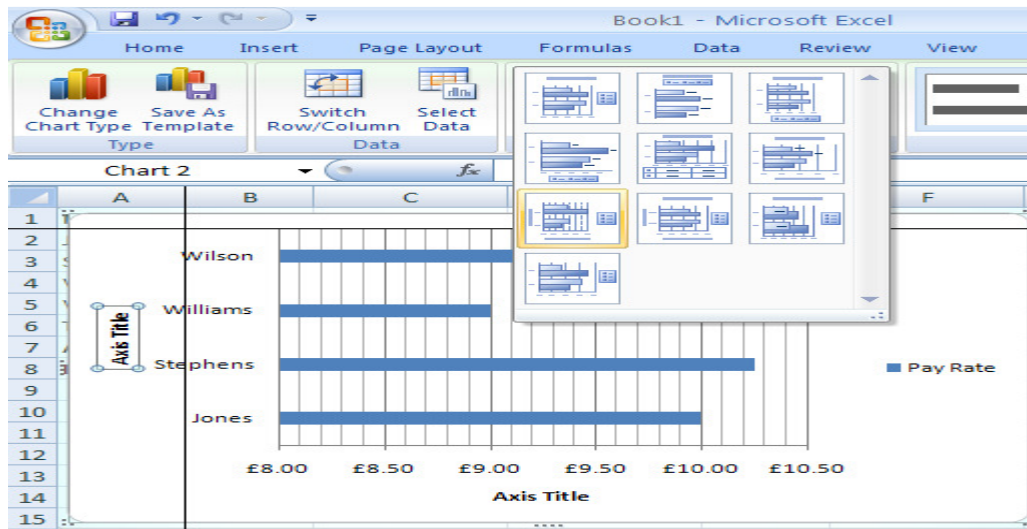
1. Select the cells to be included in the chart, including the column and row headings, as shown (A1:B5).
2. When you have your text and numbers selected, select the **Insert Tab**.
 - a) Select **Bar** chart.
 - b) Browse through the **Chart sub-types** by clicking on them (the chart sub-type is written in the lower pane). To view your data in the chart, click on the button that says **Press and Hold to View Sample**.
 - c) Click on the **Clustered Bar** picture.
3. At this stage you can modify the chart to suit the required audience.



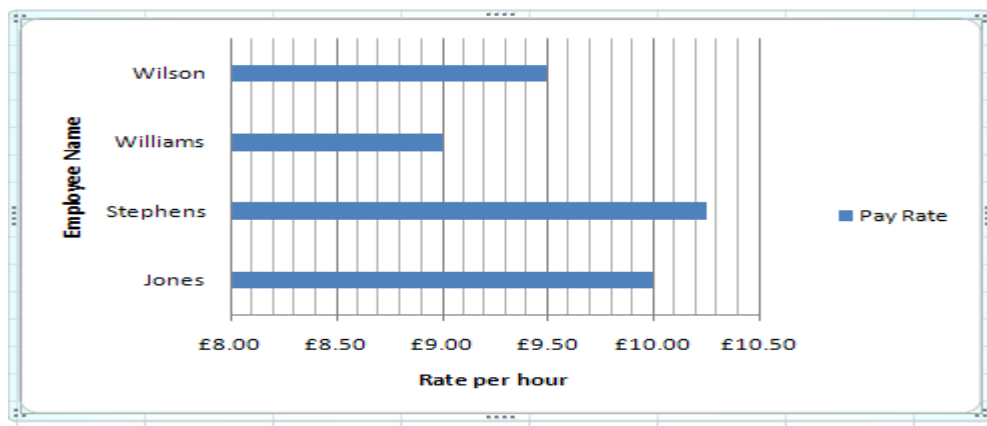
	A	B	C	D
1	Name	Pay Rate	Hours Worked	Overtime
2	Jones	£10.00	39	Yes
3	Stephens	£10.25	30	No
4	Williams	£9.00	41	Yes
5	Wilson	£9.50	38	Yes
6	TOTALS			
7	AVERAGE	£9.69	37	
8	MAX	£10.25		
9				



4. Select the **Chart Layout** icon and select **layout 7** (hold mouse over the icons and the layout type will display briefly)



5. Make changes to the x axis title and y axis title as shown below. Then drag your chart to a convenient location of the worksheet.



Copying the Chart to Microsoft Word

A finished chart can be copied into a Microsoft Word document. Select the chart and click **Copy**. Open the destination document in Word and click **Paste**.

EXERCISE

1. Create a pie-chart to illustrate the Pontardawe Arts Festival worksheet. Place the chart on the same page as the worksheet. Include a legend and data labels to show percentage of each expense.

PONTARDAWE ARTS FESTIVAL

Expense	Estimated	Actual	% of Total
Trestle Hire	350	420	4.35%
Marquee Hire	1000	1000	10.37%
Hire of Field	250	250	2.59%
Acts Booked	3500	3750	38.88%
Beer Quantity	3000	2750	28.51%
Bar Staff	300	300	3.11%
Lighting	245	275	2.85%
Ticket Staff	100	100	1.04%
Security	600	800	8.29%
Total		9645	

2. You are required to produce a line graph showing the profit/loss of a local publishing company. The information includes some predictions.

A Enter the following data:

YEAR	PROFIT/LOSS
	(£ 000s)
1970	20
1975	3
1980	2
1985	12
1990	14
1995	15
2000	18

- B Create a line graph. Enter the x (horizontal) axis title as YEAR and the y (vertical) axis title as £000s. The heading for the graph is PROFIT AND LOSS FOR MULTILINGUAL MATTERS.

Remember (a) how many lines should be in the graph and (b) in the second step paying attention to the series screen.

3. In this question, you will learn how to edit the y-axis by setting the upper and lower scale limits.

Any changes to the graph may be carried out when the graph is finished by clicking on the area you wish to change e.g. title font, label alignment, scale of axis, etc

A Enter the following data:

COUNTRY	AGE
Australia	74
China	69
Egypt	62
India	60
UK	73
USA	73

B Create a bar chart. Title the x-axis COUNTRIES and the y-axis AGE IN YEARS.
Enter the title for the bar chart: LIFE EXPECTANCY FOR MALES

C Set the y (vertical) axis to display the age range from 70 to 75 years.

ERROR-PROOFING YOUR WORKBOOK

You can make two kinds of errors when creating a worksheet: data-entry errors and logical errors.

Minimizing Data-Entry Errors

You're entering payroll. You're in a hurry. Instead of entering Richard Steinhoff's 10 hours, you enter 100. When payday rolls around, you are not a happy person. A helpful tool called data validation allows you to build business rules into your workbook so that grossly incorrect entries result in error messages.

Business rules govern how a business operates. Examples of business rules include: no refunds after 30 days, no-one ever works more than 80 hours, etc. Validation ensures that the data entered falls within the range allowed by the business rule.

Setting Validation Rules

We'll use the error in entering payroll as an example.

1. Select the cells you want to validate.
2. Choose Data, Validation to open the Data Validation dialog box.
3. If you want to set validation rules, on the Settings page, set validation criteria for entries allowed, data, and minimum and/or maximum.
4. If you want to include an input message, enter a message and optional title on the Input Message page. Make sure the Show Input Message When Cell is Selected checkbox is checked.
5. If you want to display an error message when invalid data is entered, choose a style and enter an error message and optional title on the Error Alert page. Make sure the Show Error Alert After Invalid Data is Entered checkbox is checked.
6. Click OK.
7. Test the input message, validation and error message by entering invalid data in one of the cells you selected.

EXERCISE

PAYROLL	Hourly Rate	Hours Worked	Gross Pay
Evans, J			
Henderson, B			
Jones, R			
Morgan, D			
Phillips, A			
Smith, K			

1. Create the above spreadsheet.
2. Enter the following validation rules
 - (i) Cells B2 – B7 Allow Decimal Number between £3.50 and £7.00
Input a message of title: Stop and message Decimal No between £3.50 and £7.00 only
 - (ii) Cells C2 – C7 Allow Whole Number between 37 and 40 hours
Input an Error Alert Title of Check Timesheet and a suitable message of your choice.

Then enter the following data:

PAYROLL	Hourly Rate	Hours Worked	Gross Pay
Evans, J	£5.00	40	£200.00
Henderson, B	£4.75	37.5	£178.13
Jones, R	£6.50	42	£273.00
Morgan, D	£4.10	45	£184.50
Phillips, A	£7.75	40	£310.00
Smith, K	£6.50	37.5	£243.75

Using the IF Function

Use IF to evaluate whether a value meets a certain condition and to display results depending on whether or not the condition is met. e.g. a teacher keeps an Excel worksheet which maintain a minimum pass score of 65%. An IF statement can be set up so that the cell adjacent reads Pass or Fail, depending on whether that student reaches 65% or above. Three arguments are entered for an IF statement.

IF

Logical_test: J5<65 = TRUE

Value_if_true: "fail" = "fail"

Value_if_false: "pass" = "pass"

Returns one value if a condition you specify evaluates to TRUE and another value if it evaluates to FALSE.

Value_if_false is the value that is returned if Logical_test is FALSE. If omitted, FALSE is returned.

Formula result: = "fail"

OK Cancel

Using an IF function:

1. Click in the cell where you want your first value displayed
2. Click the Paste Function Button and choose IF
3. Enter the expression you want to use as a logical test e.g. J5<65
4. Enter values for when the expression evaluates to True and False
5. Click OK to close the Formula Palette and fill the formula to other cells as needed

Question:

1. Create the following spreadsheet

Student	Test 1	Test 2	Test 3	Total	Pass/Fail
J Jones	45	64	55	164	

2. Fill in a further 9 students results

3. Total the results

4. Based on a percentage of 45, calculate using IF how many students passed or failed the course.

TUTORIAL QUESTION - Absolute Cell Addressing

Create the following spreadsheet

	A	B	C	D	E	F	G	H	I	J	K	L	M
3	Expense	Estimated	Actual	% of Actual	% of Total								
4	Trestle Hire	350	420										
5	Marquee Hire	1000	1000										
6	Hire of Field	250	250										
7	Acts Booked	3500	3750										
8	Beer Quantity	3000	2750										
9	Bar Staff	300	300										
10	Lighting	245	275										
11	Ticket Staff	100	100										
12	Security	600	800										
13													
14	Total		9645										
15													
16													
17													
18													
19													
20													

1. Calculate the actual amount spent as a percentage of the estimated amount. Using an appropriate formula
2. Calculate each expense as a percentage of the total amount
3. Format relevant cells to currency and percentage