

# COMP1000 / Spreadsheets – Reminders

- The COMP1000 home page is at <https://webcms3.cse.unsw.edu.au/COMP1000/17s1/>
- Check notice regularly.
- You need to set up a School of CSE computing account to do the lab classes in COMP1000.
- You need a password to access parts of the COMP1000 web site.

## COMP1000 / Spreadsheets – Labs

- We can't cover every details in the lecture. Instead, we'll just give an overview of how to use Excel.
- We encourage you to finish the assignments prior to labs.
- In the labs, tutors are only responsible for marking and answering major issues.
- Labs cannot be handed in late – they have to be marked by the demonstrator during the lab time.
- Email submission is not allowed (except this week).
- You can request to change the lab time if you're sick or there're other emergencies. But you need to wait for available computers.

# COMP1000 / Spreadsheets – Week 1 Review

- Enter and edit data
- Create and manage spreadsheets
- Functions such as IF, VLOOKUP, PMT...

# COMP1000 / Spreadsheets – Week 1 Review

- Produce a table of loan repayments for a loan:
  - Principal = \$1,000,000
  - Terms from 20 to 30 years (one-year steps)
  - Interest rates from 4.5% to 7.5% p.a. (0.5% steps)
- *Demonstration...*

# Objectives

- Decide which chart type to create
- Create a chart
- Change the chart type
- Change the data source and structure
- Apply a chart layout and style
- Move a chart

# Objectives (continued)

- Print charts
- Insert and customize a sparkline
- Select and format chart elements
- Customize chart labels
- Format axes and gridlines
- Add a trendline

# Chart Basics

- A **chart** is a visual representation of numeric data

	A	B	C	D	E	F
1	<b>Hort University</b>					
2	<b>Number of Majors by College</b>					
3						
4		<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>Average</b>
5	Arts	950	1,000	1,325	1,330	1,151
6	Business	3,975	3,650	3,775	4,000	3,850
7	Education	1,500	1,425	1,435	1,400	1,440
8	Humanities & Social Science	2,300	2,250	2,500	3,500	2,638
9	Science & Health	1,895	1,650	1,700	1,800	1,761
10	Technology & Computing	4,500	4,325	4,400	4,800	4,506
11	Undeclared	<u>5,200</u>	<u>5,500</u>	<u>5,000</u>	<u>4,700</u>	<u>5,100</u>
12	<b>Totals by Year</b>	<b><u>20,320</u></b>	<b><u>19,800</u></b>	<b><u>20,135</u></b>	<b><u>21,530</u></b>	<b><u>20,446</u></b>
13						

# Chart Basics

- Chart components include:
  - Each cell containing a value is **Data Points**
  - A group of data points that appear in rows or columns create a **Data Series**
  - Textual information, such as column and row labels (college names, years etc.) is used to create **Category Labels**

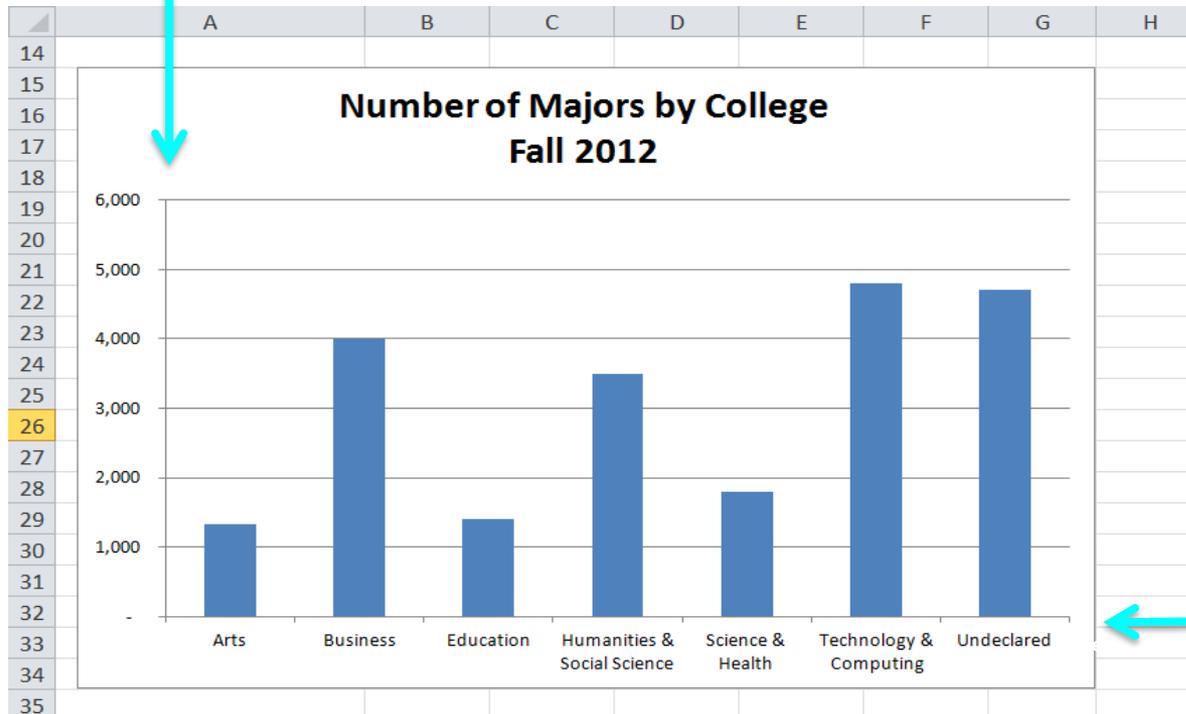
# Chart type

- Column charts (clustered, stacked, 3-D, etc.)
- Bar chart
- Line chart
- Pie chart
- Scatter chart
- Stocker chart
- ...

# Column Charts

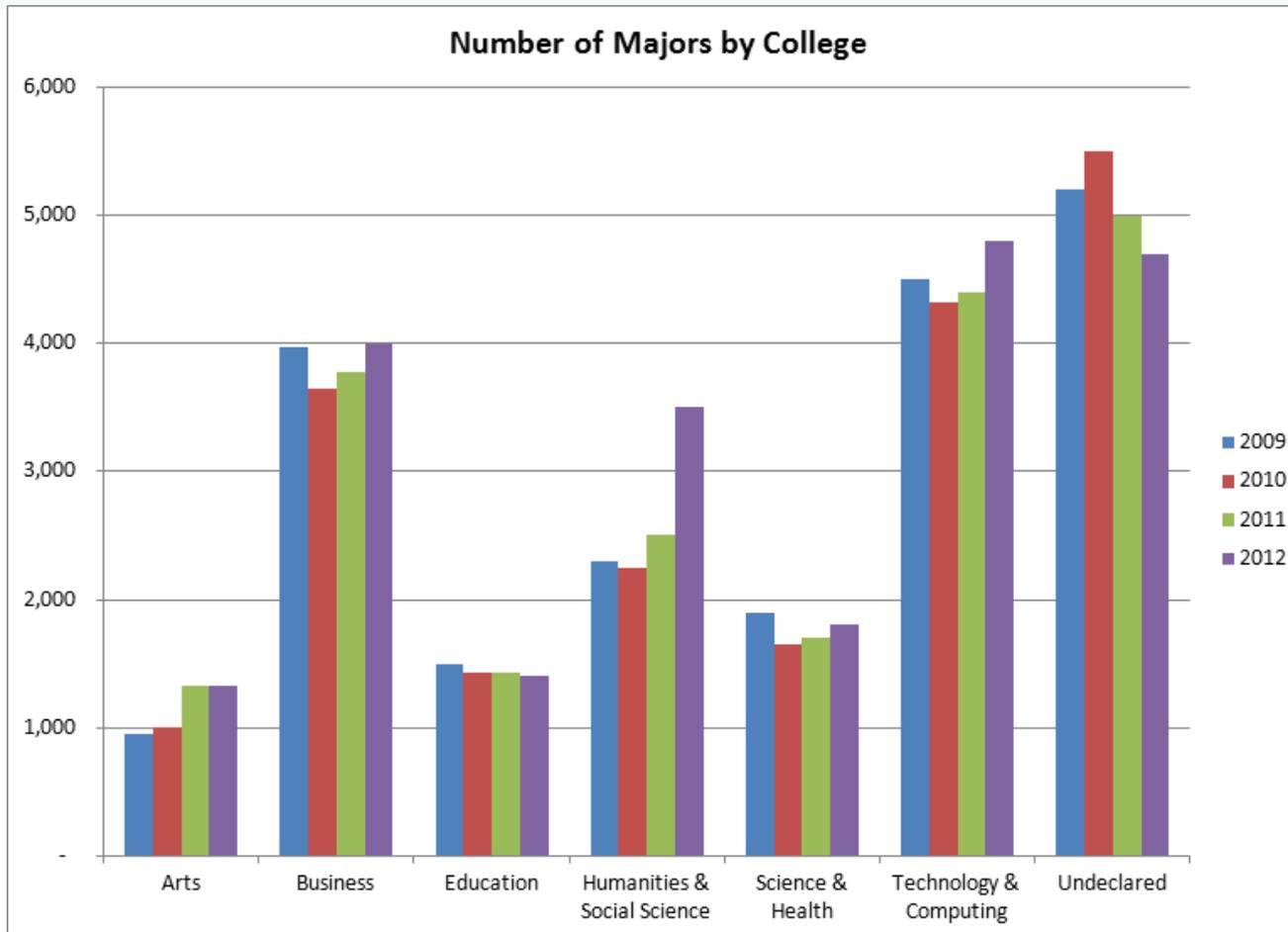
- A **column chart** displays data vertically, with each data series forming a column

y-axis or Value axis



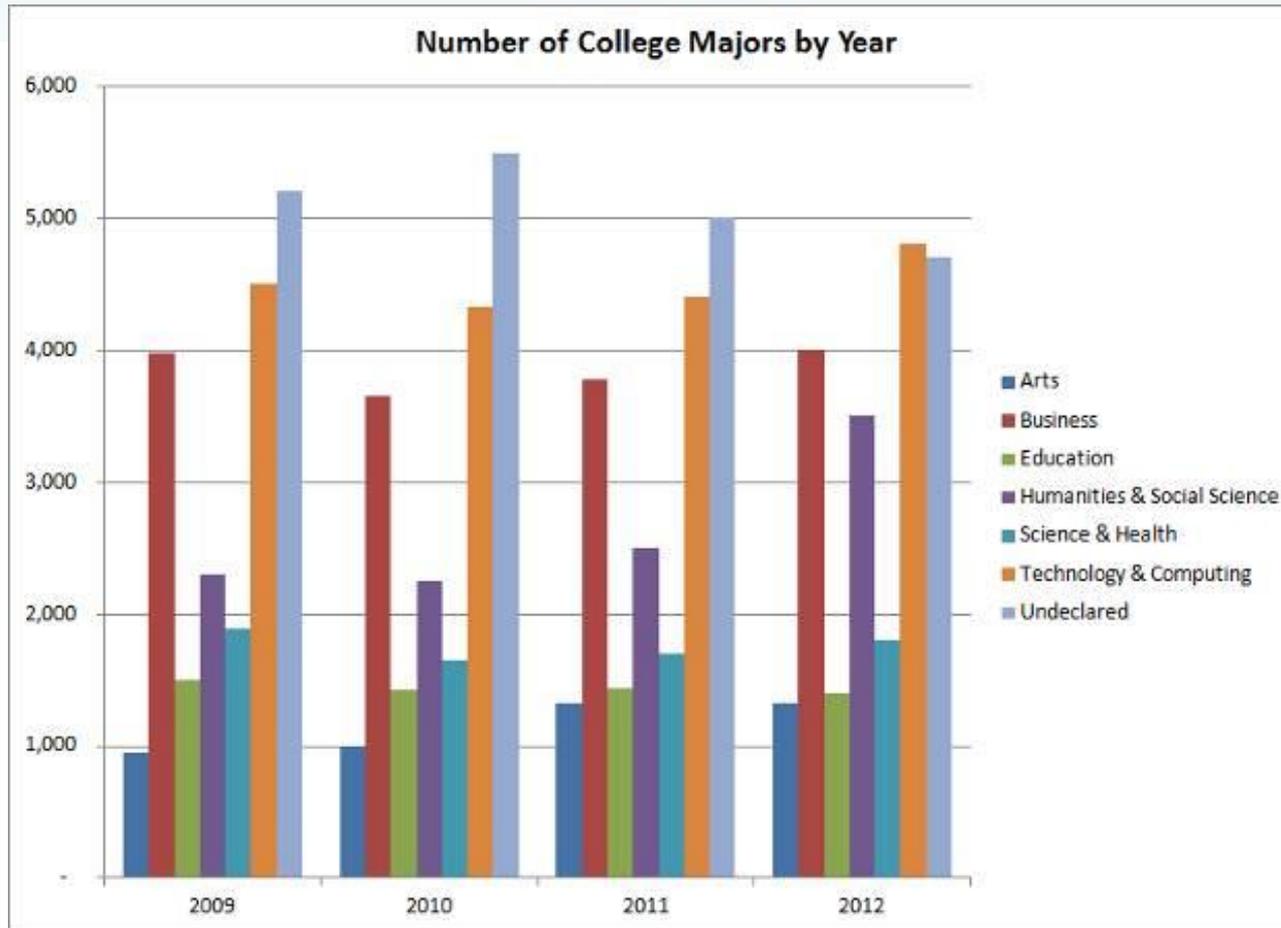
x-axis or  
Category axis

# Clustered Column Chart



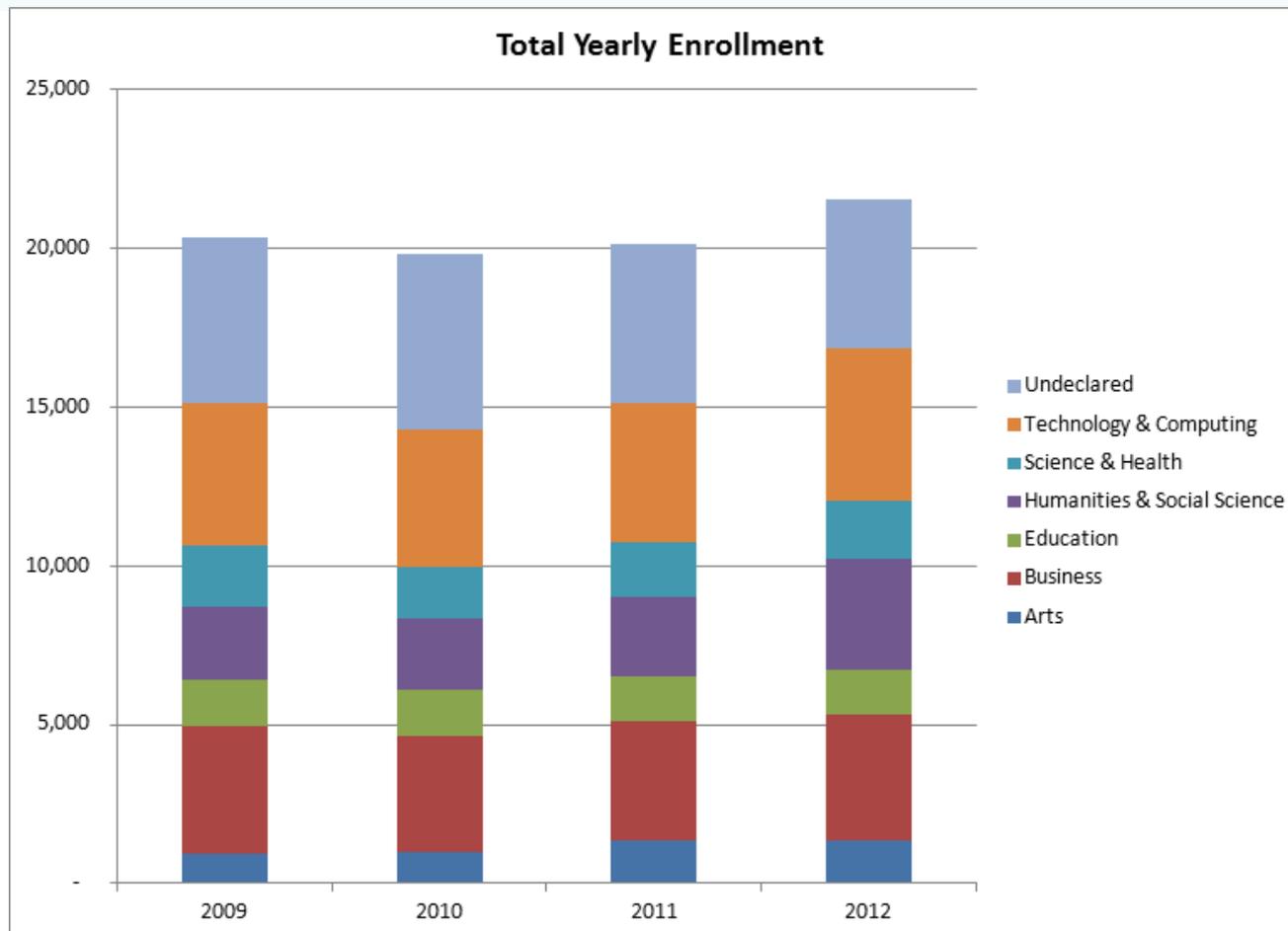
- Insert tab / Charts group / Column / Clustered Column

# Reversing Categories and Data Series



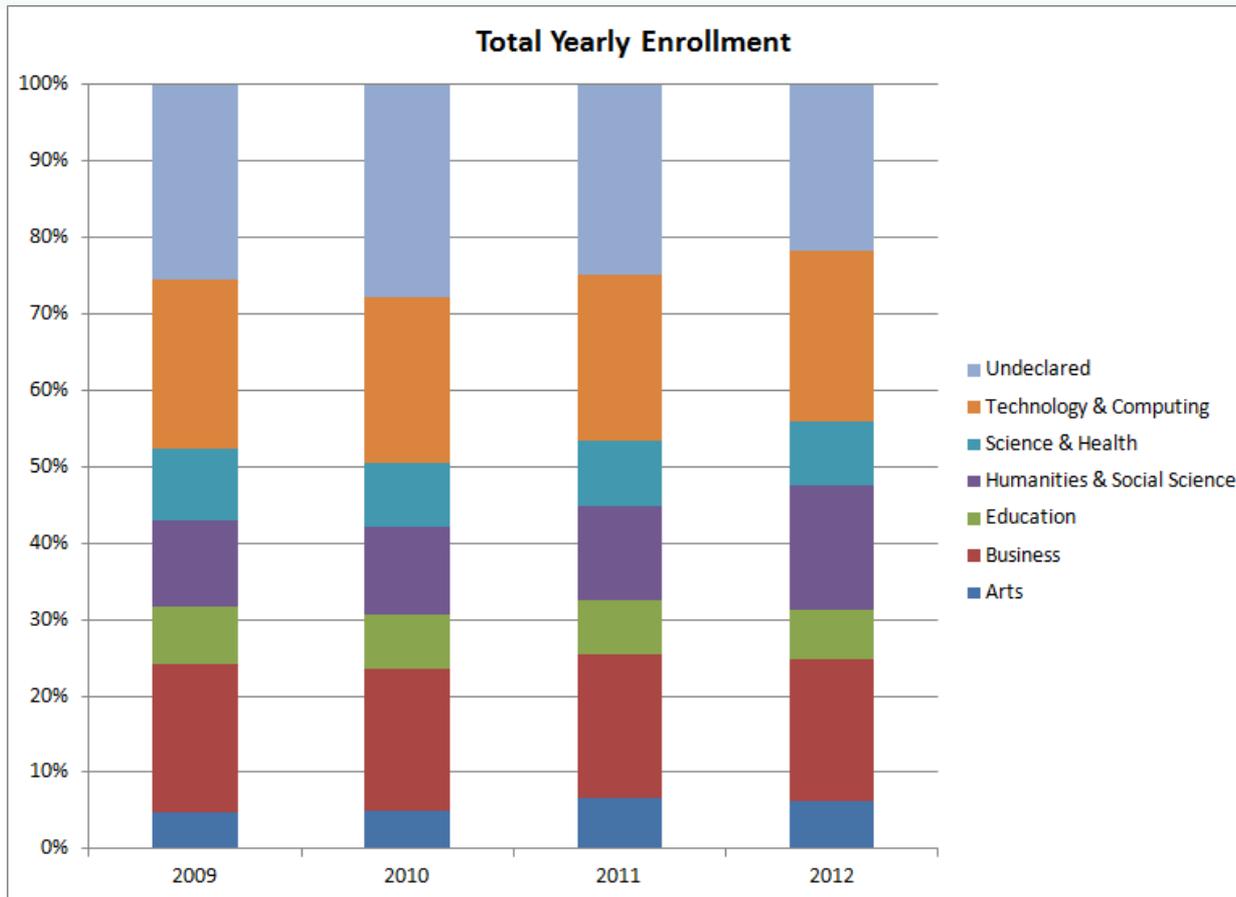
- Chart Tools / Design tab / Data group / Switch Row & Column

# Stacked Column Chart



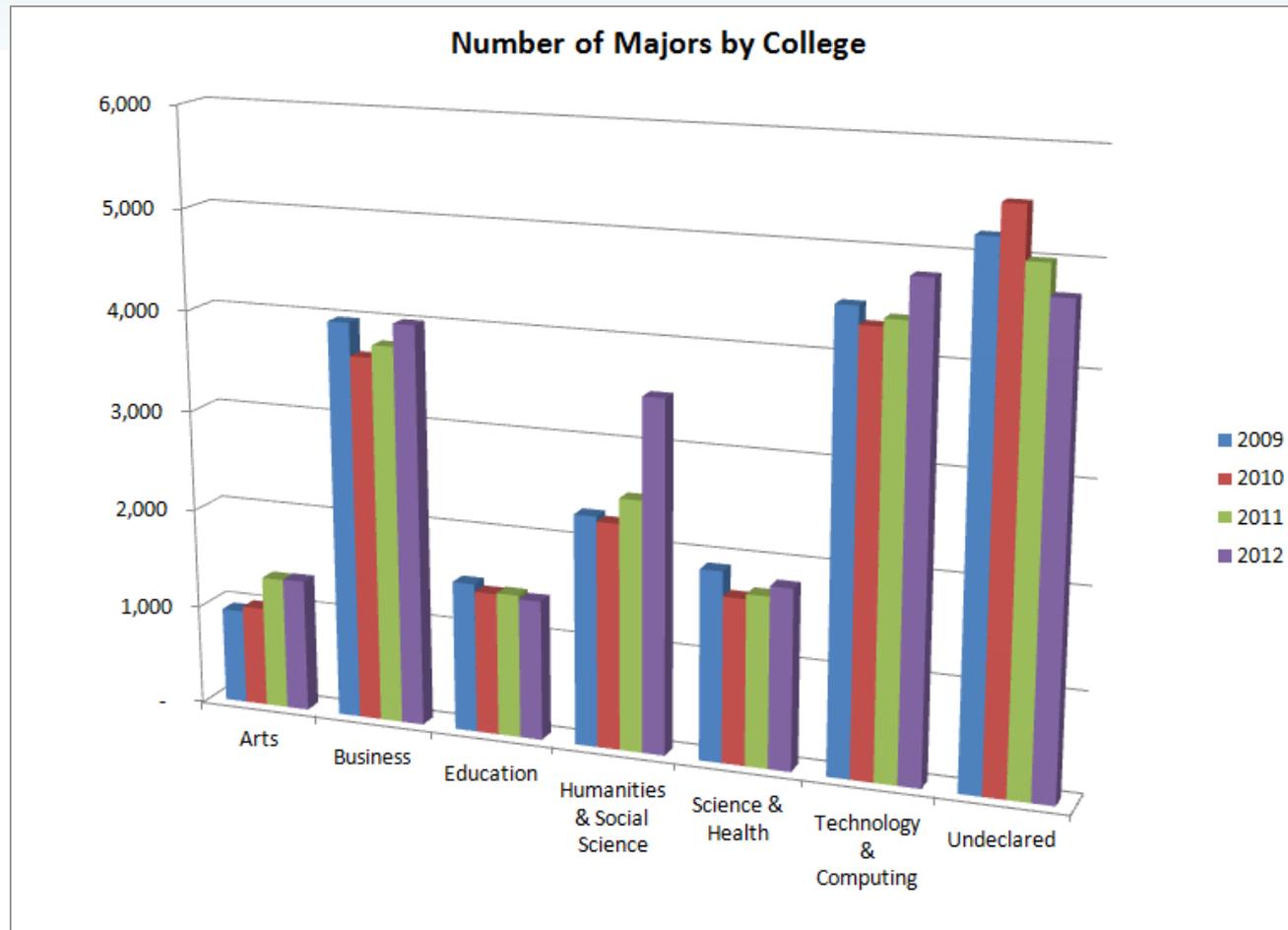
- Insert tab / Charts group / Column / Stacked Column

# 100% Stacked Column Chart



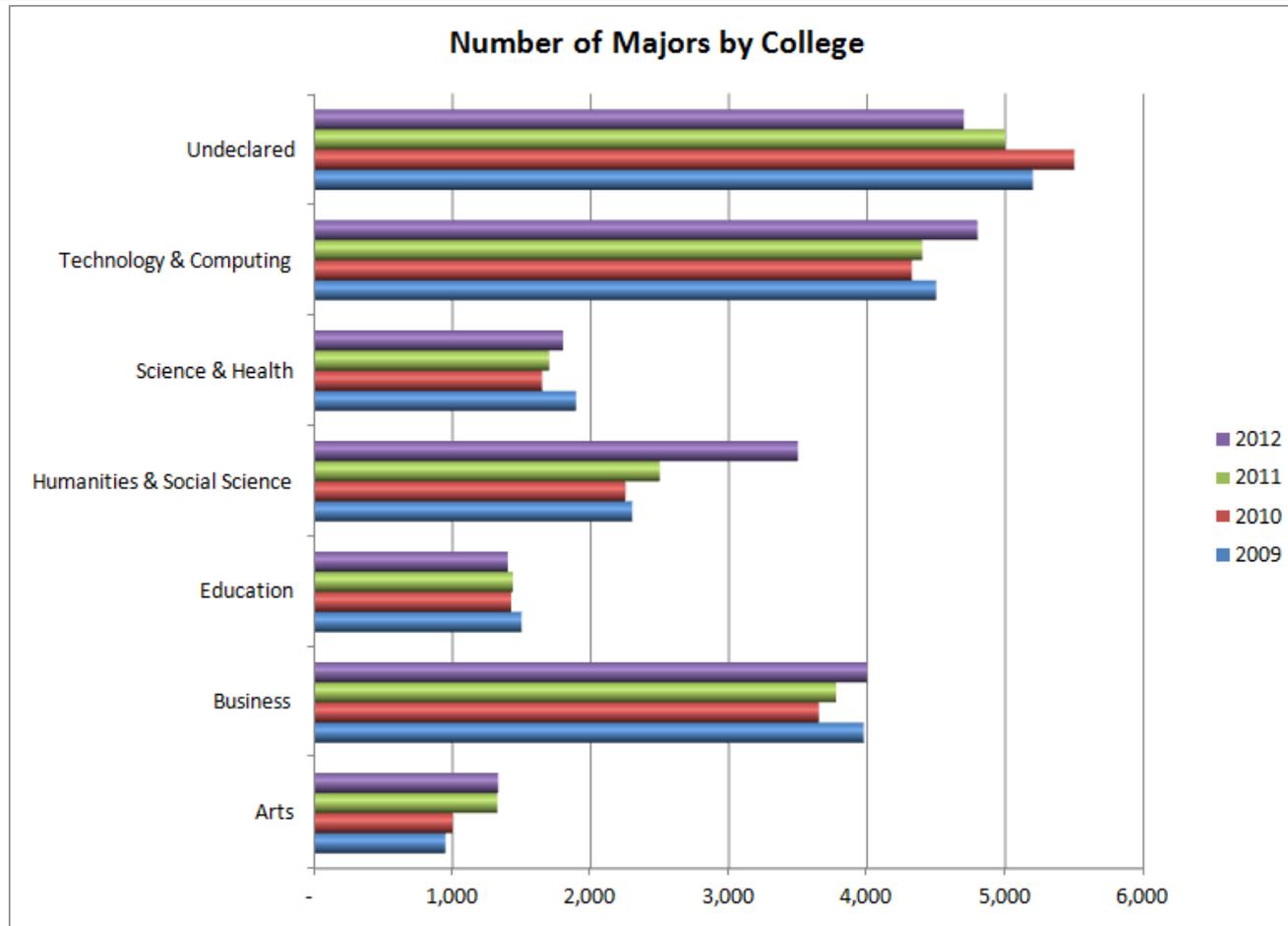
- Insert tab / Charts group / Column / 100% Stacked Column

# 3-D Column Chart



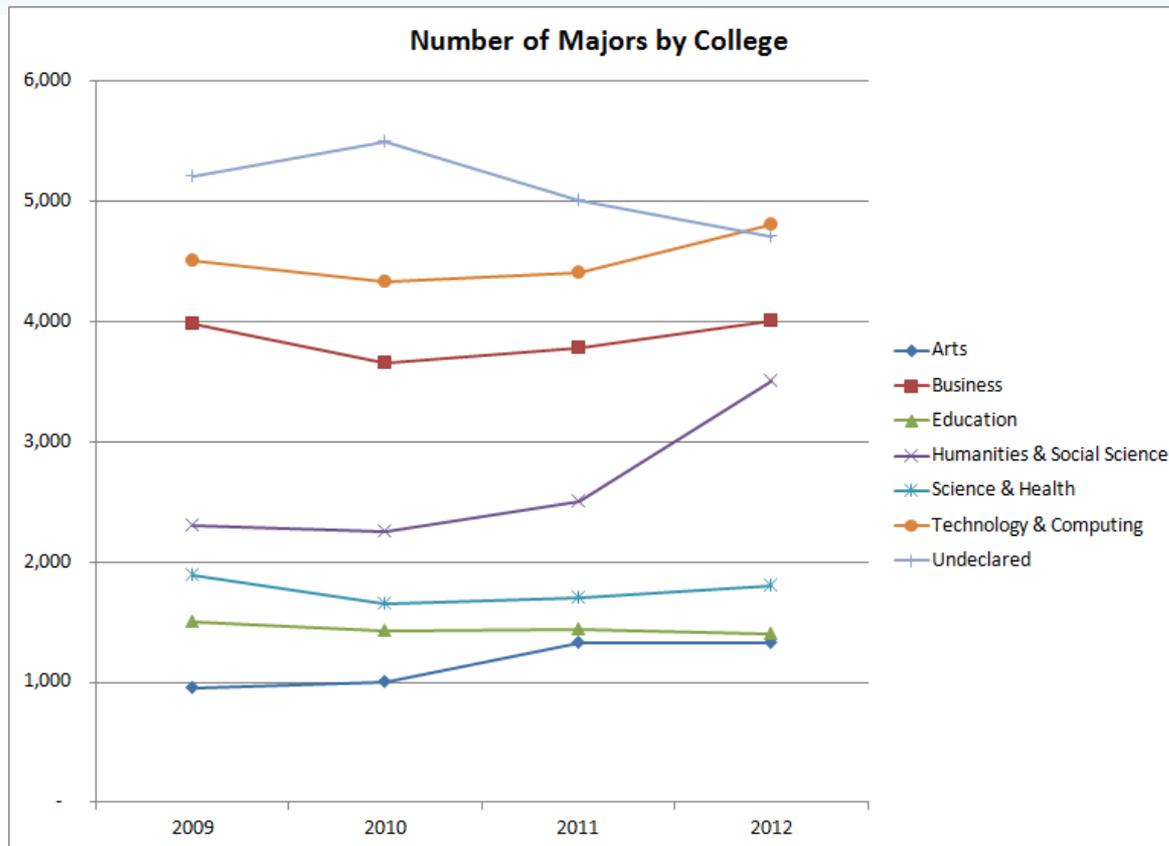
Non-horizontal axis can make comparisons difficult: avoid.

# Bar Chart



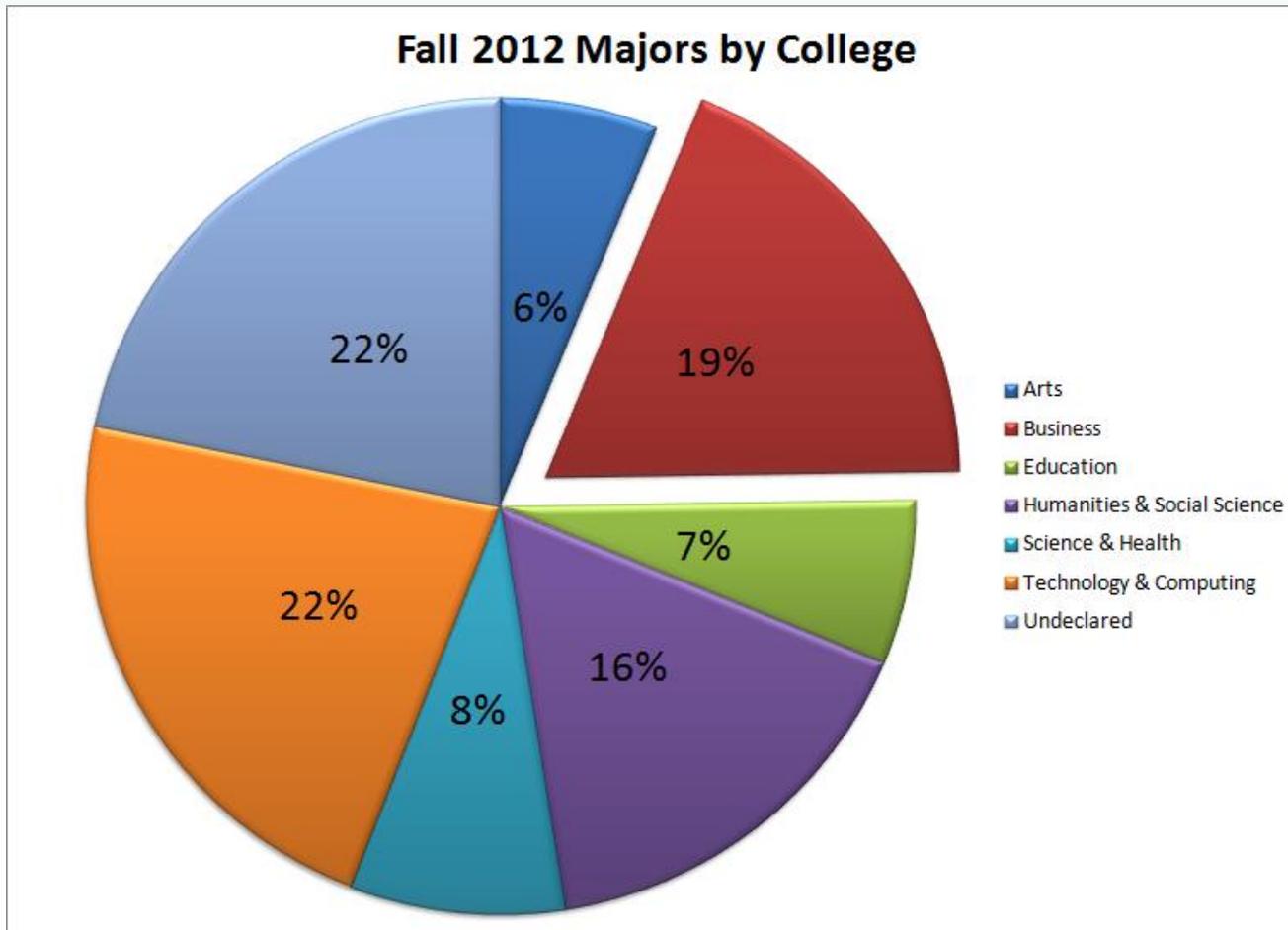
This bar chart has fancy bars (Chart Tools / Design / Chart Styles).

# Line Chart

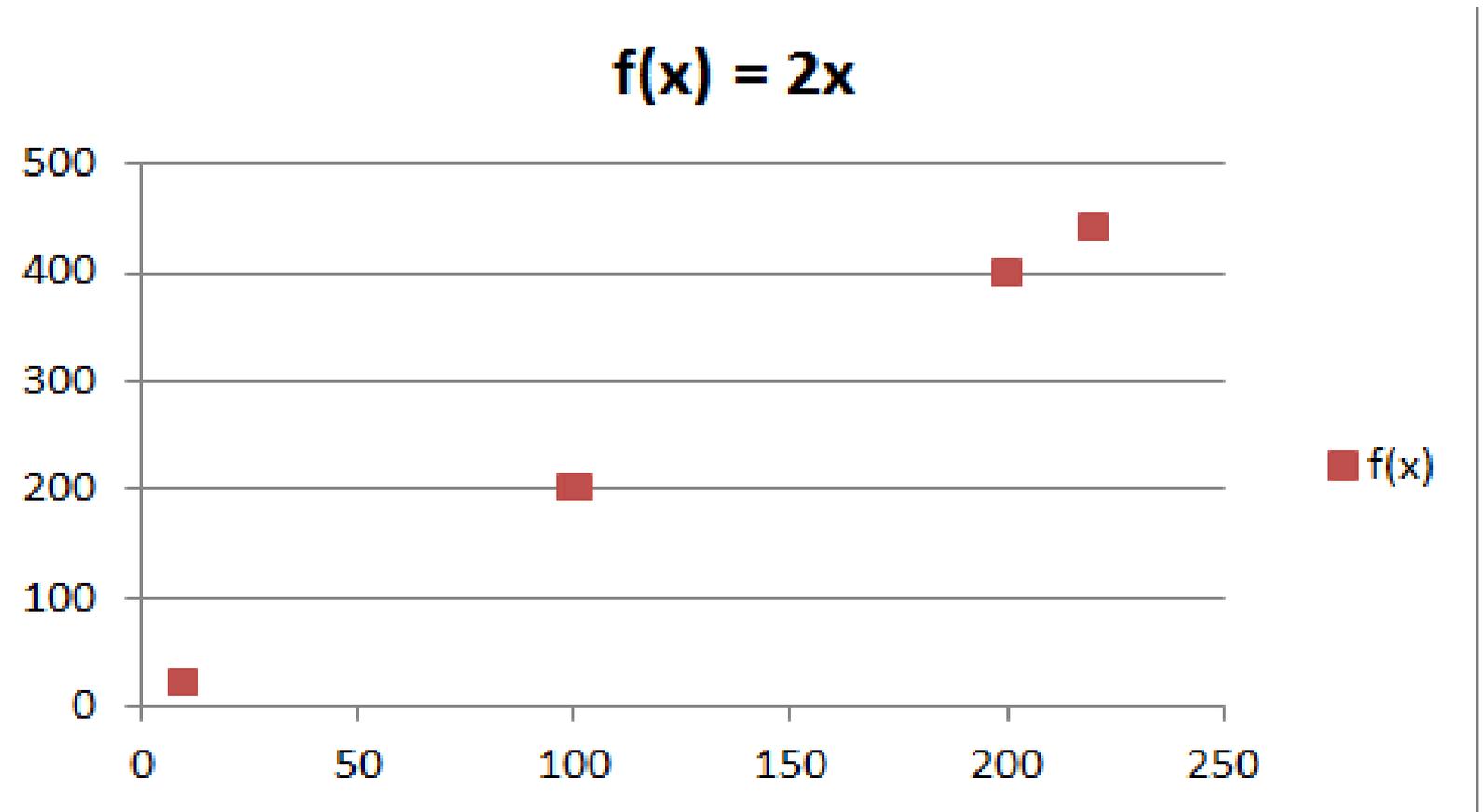


- Insert tab / Charts group / Line button / Line

# Pie Chart

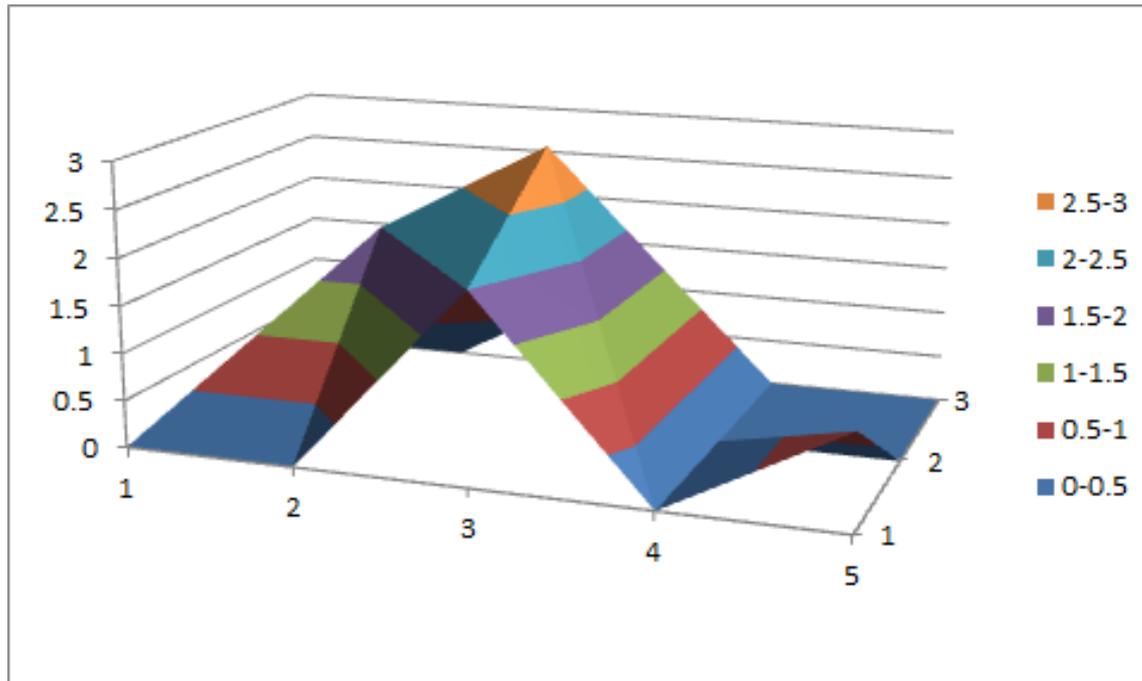


# X Y (Scatter) Chart



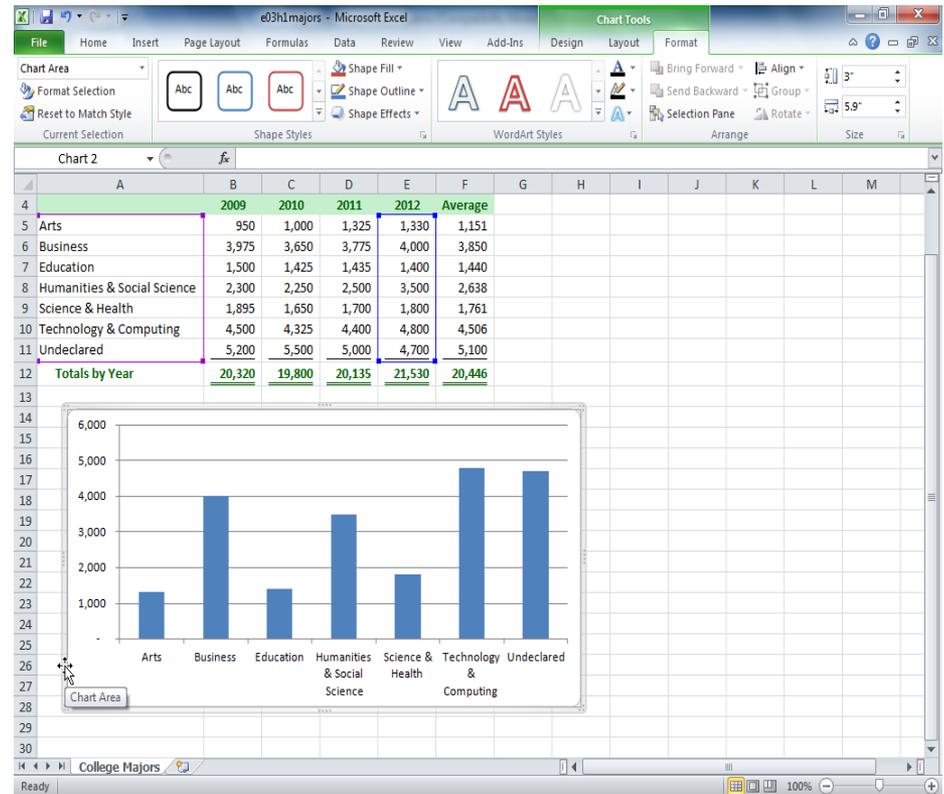
Demo:scatter

# Surface Chart



# Creating a Chart

- Select the **data source**
- Select the **chart type**
- Position and size the chart

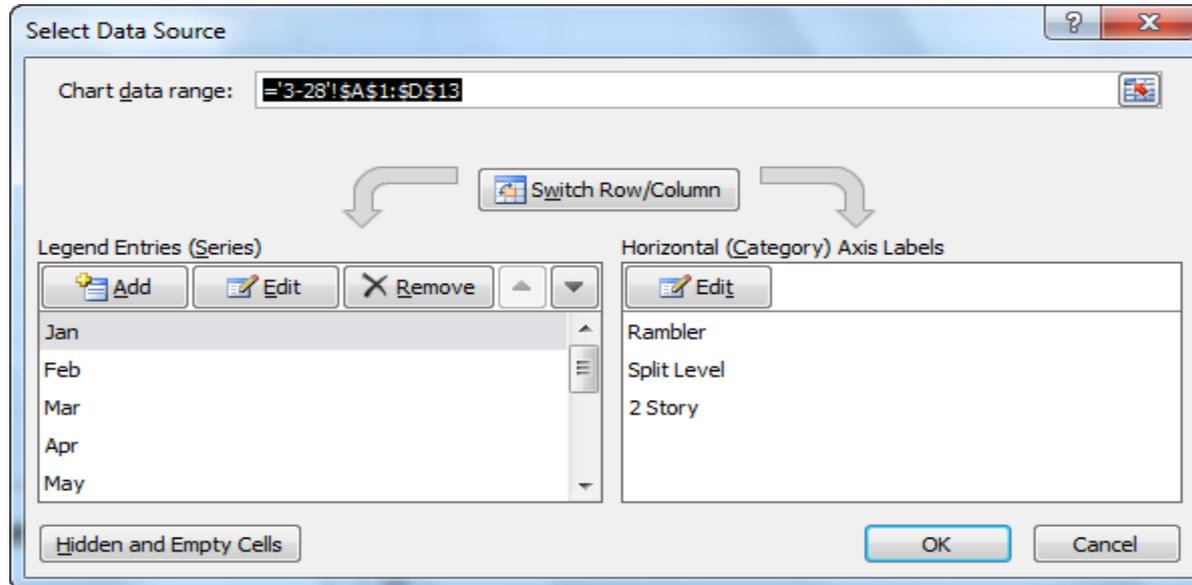


# Changing the Chart Type

- Using the **Chart Tools** contextual tab:
  - Click the **Design** tab
  - Click **Change Chart Type**
  - Select the desired chart type

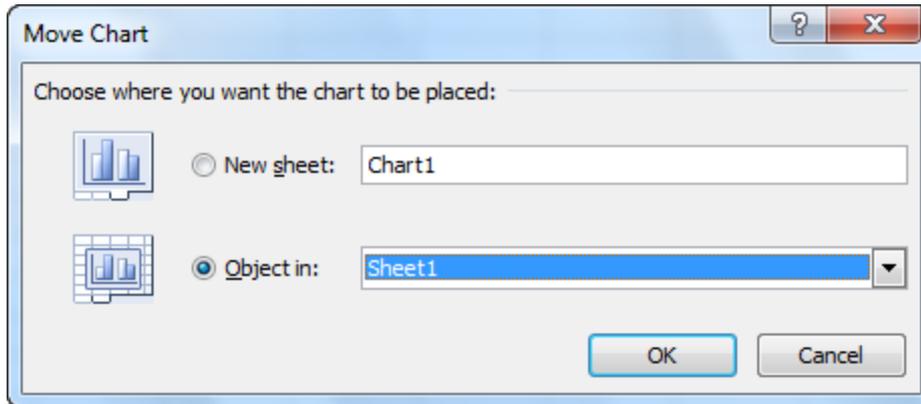
# Changing the Data Source

- To modify the chart data source:
  - Click the **Design** tab
  - Click **Select Data** under the **Data** group



# Moving a Chart

- To move a chart:
  - Click the **Design** tab
  - Click **Move Chart** under the **Location** group

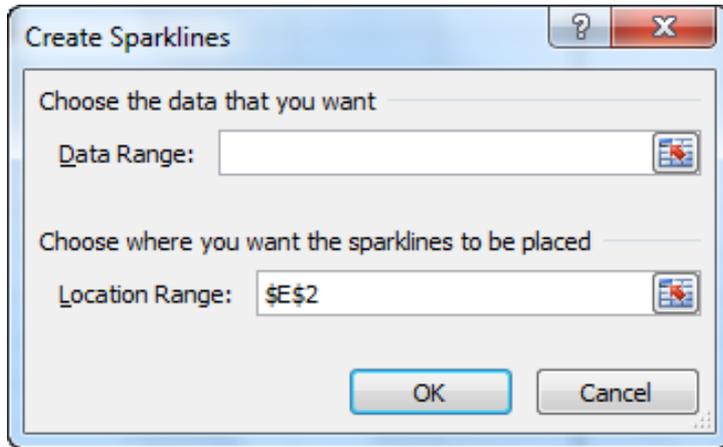


# Printing a Chart

- To print an embedded chart:
  - Select the chart
  - Click the **File** tab
  - Click **Print** to display the **Backstage** view
  - Use the **Print Selected Chart** option
- To print a chart sheet:
  - Use the **Print Active Sheet** option

# Creating a Sparkline

- A **sparkline** is a miniature chart displayed in a single cell



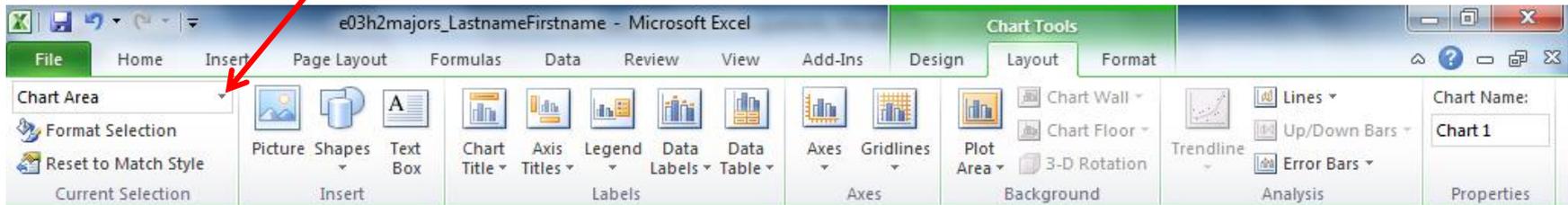
- Click Insert tab / Sparklines group / Line | Column | Win/Loss
- Dialogue box like that above comes up

- *Demo: college major*

# Chart Layout

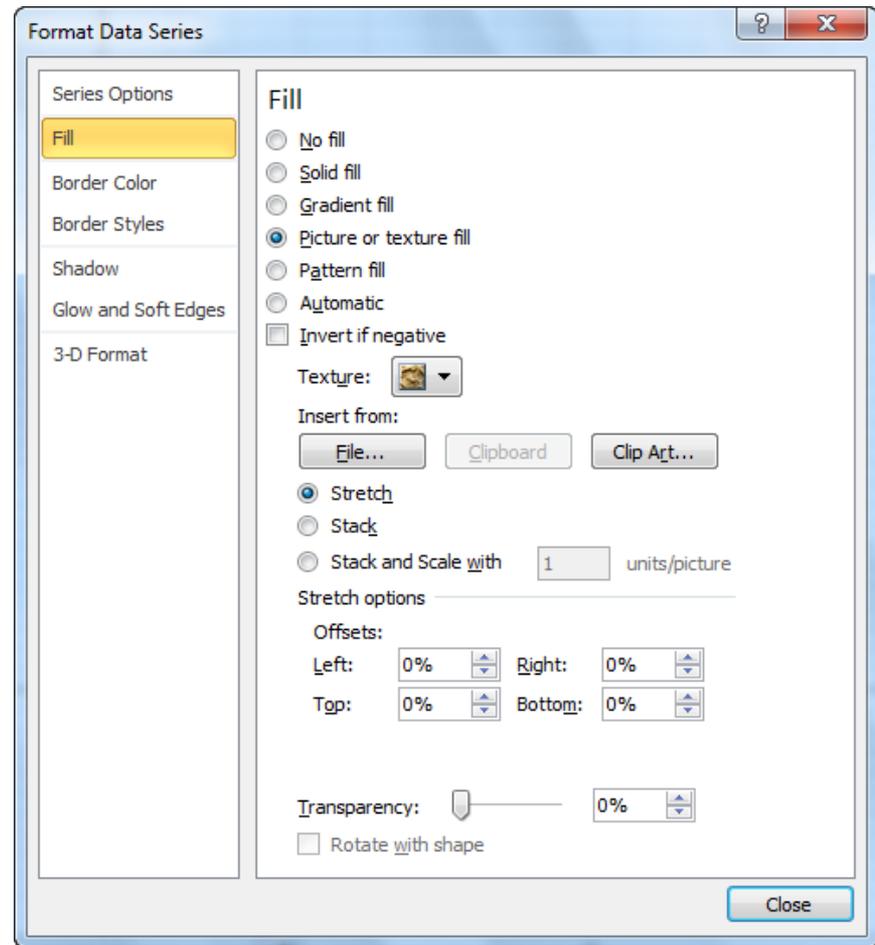
- The **Layout** tab offers many ways to enhance a chart visually

**Chart elements** arrow – the label in the box will be the most recently selected chart element.

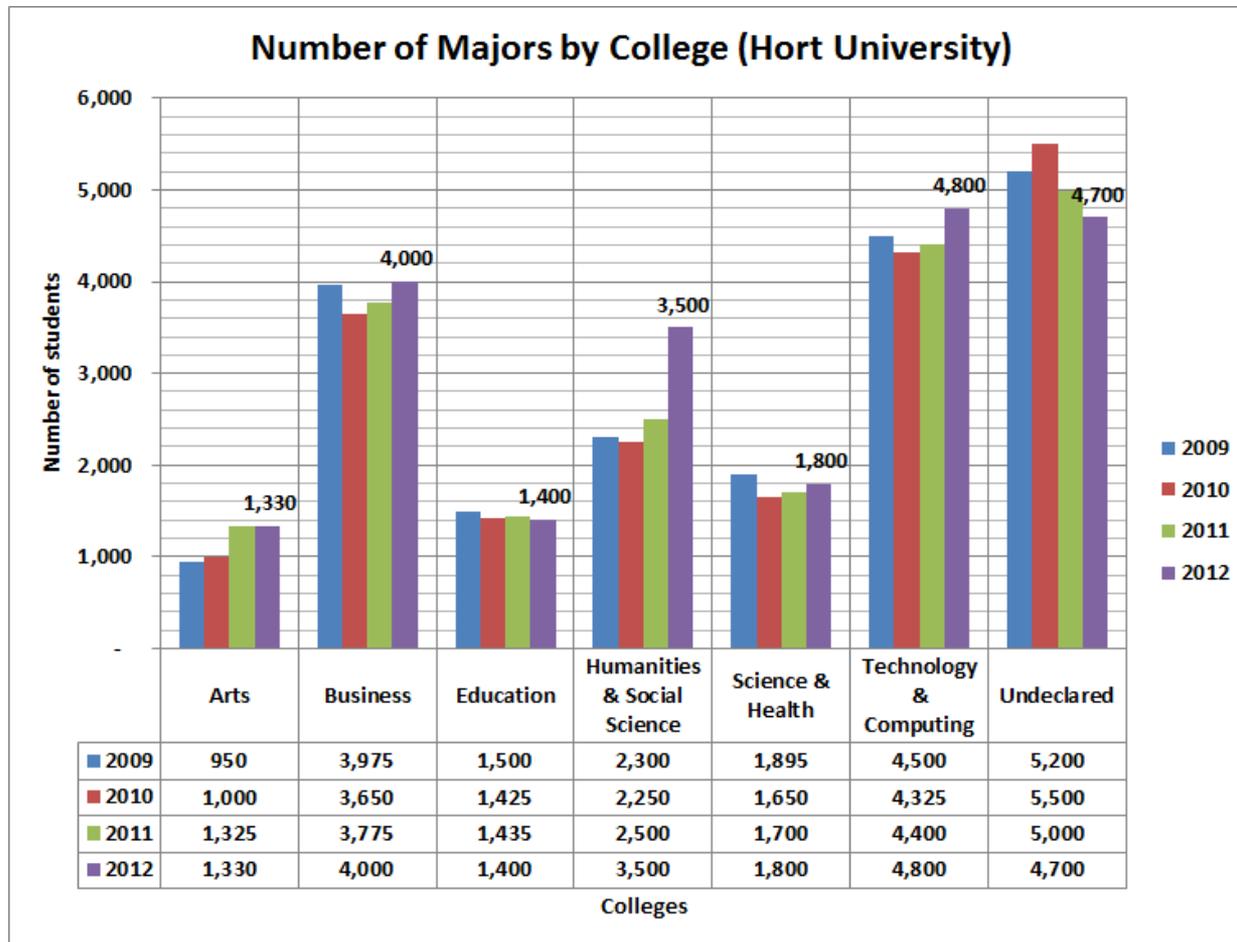


# Selecting and Formatting Chart Elements

- Formatting a chart element:
  - Right-click the element and select the **Format element** command
  - The element portion will change depending on the selection (ex. Format Data Series)



# Customizing Chart Labels



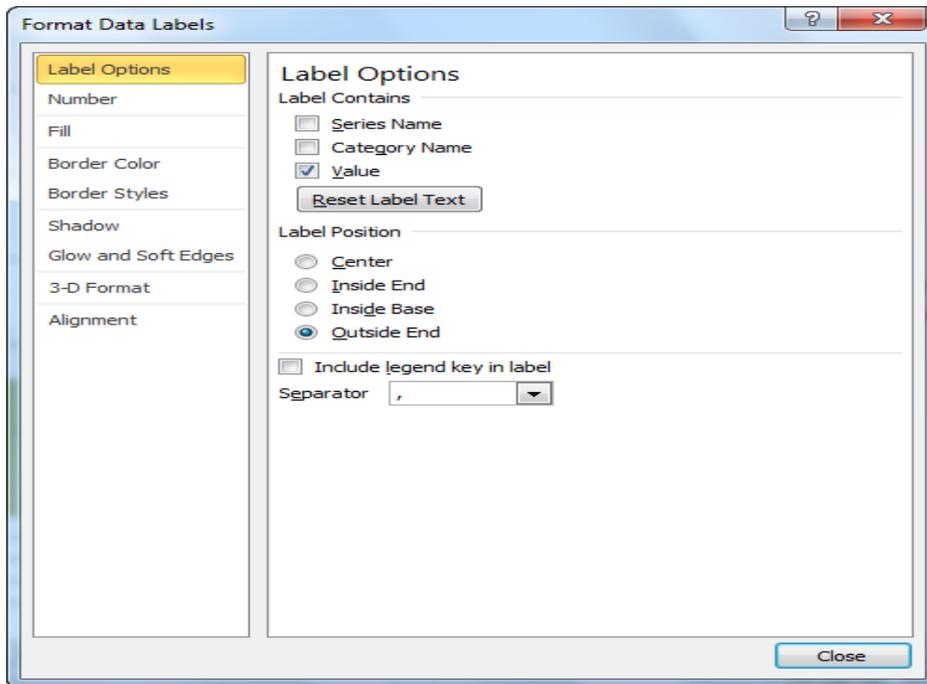
- Click Chart Tools / Layout / Labels / Data Table

# Chart Titles and Legend

- A **chart title** is the label that describes the entire chart
- An **axis title** is a label that describes either the category or value axis. *Always use axis titles.*
- A **legend** is used to identify sectors in a pie chart or data series in a multiple series chart. *Make labels in a legend meaningful.*

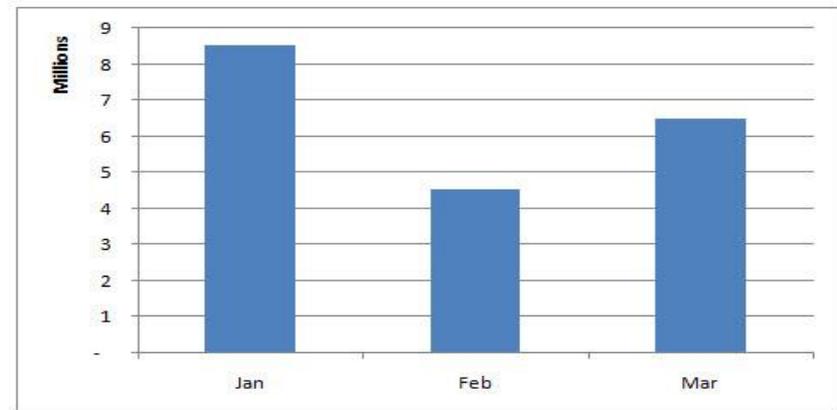
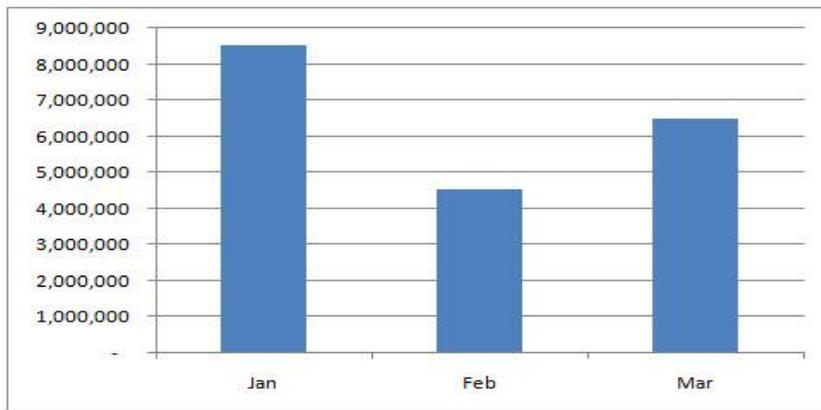
# Data Labels

- A **data label** is the value or name of a data point



# Axes and Gridlines

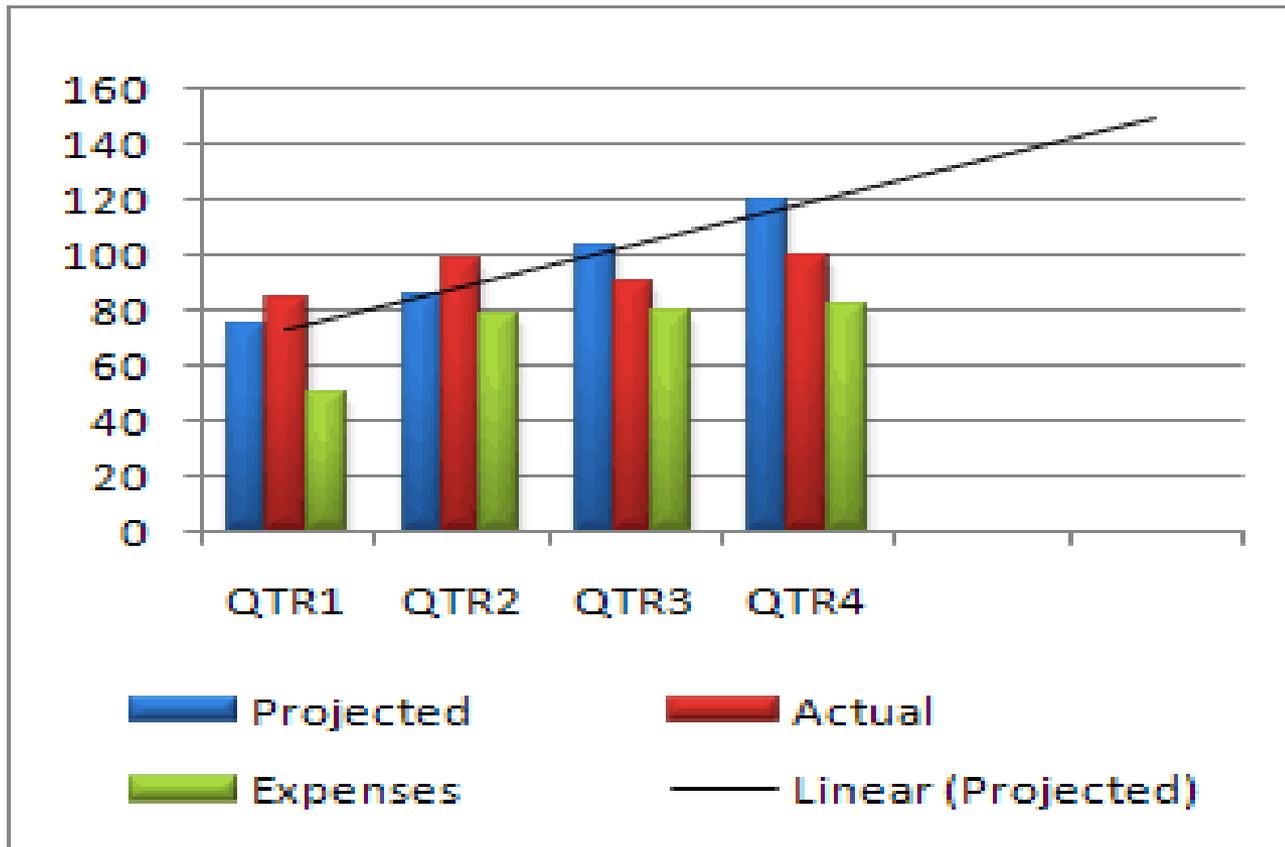
- Excel computes starting, ending, and incremental values for display on the value axis
- A **gridline** is a horizontal or vertical line through the plot area



- Chart Tools / Layout / Axes / Gridlines / ...
- Chart Tools / Layout / Axes / Axes / Primary Vertical Axis / Show axis in millions

# Trendline

- Trendline: to depict trends or forecast future data

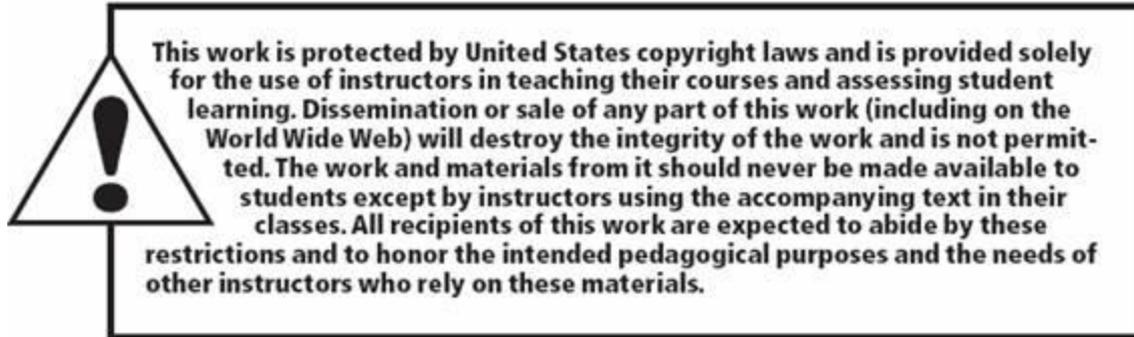


Demo:trendline

# Summary

- In this chapter, you have learned to create charts such as column, bar, pie and line charts.
- You can modify an existing chart by changing the chart type, location or data source.
- You can insert, remove, and format chart elements such as titles, labels, and the legend.

# Copyright



# Grauer Chapter 4 – Excel Datasets and Tables

## Objectives

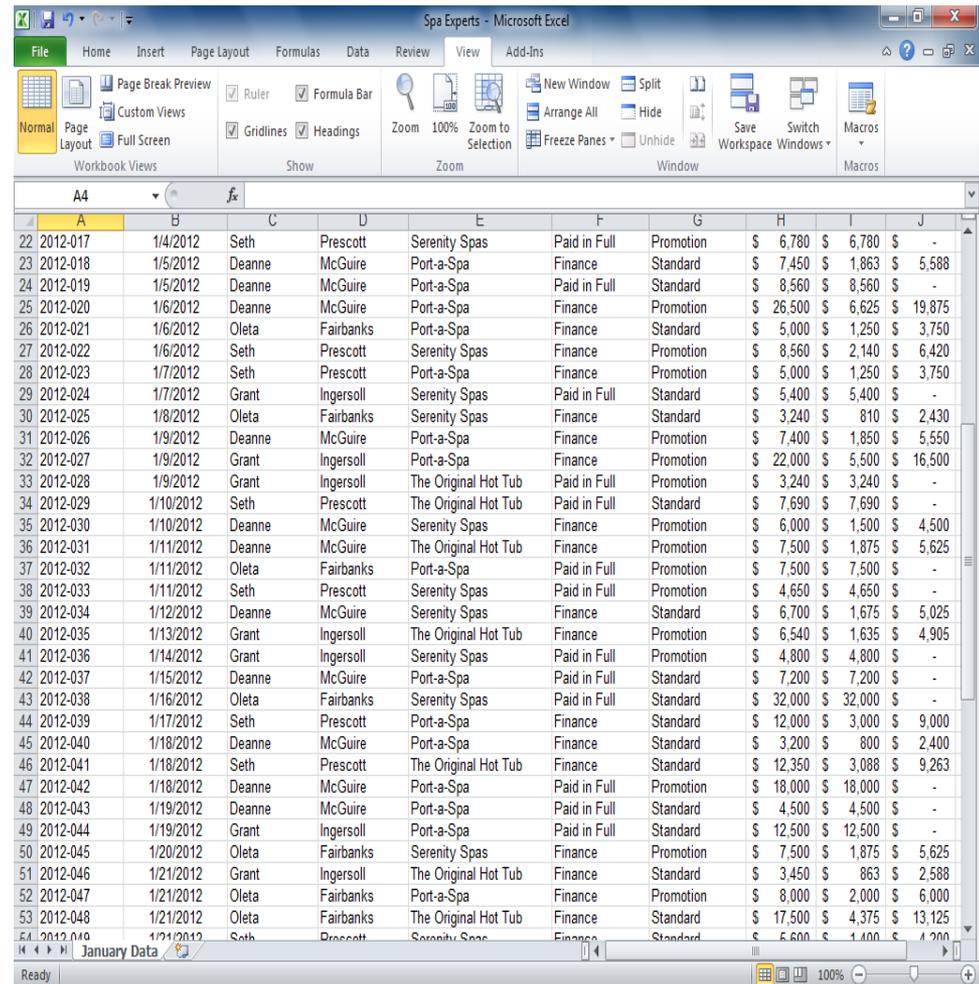
- Freeze rows and columns
- Print large datasets
- Understand table design
- Create a table
- Apply a table style
- Sort data

# Objectives (continued)

- Filter data
- Use structured references and a total row
- Apply conditional formatting
- Create a new rule
- Sort and filter using conditional formatting

# Large Datasets

- A large dataset can be difficult to read
  - Row and column headings may scroll off the screen



The screenshot shows a Microsoft Excel spreadsheet titled "Spa Experts - Microsoft Excel". The spreadsheet contains a large dataset with 34 rows and 33 columns. The columns are labeled A through J, with the remaining 23 columns being hidden. The data includes dates, names, spa types, and financial figures.

	A	B	C	D	E	F	G	H	I	J
22	2012-017	1/4/2012	Seth	Prescott	Serenity Spas	Paid in Full	Promotion	\$ 6,780	\$ 6,780	\$ -
23	2012-018	1/5/2012	Deanne	McGuire	Port-a-Spa	Finance	Standard	\$ 7,450	\$ 1,863	\$ 5,588
24	2012-019	1/5/2012	Deanne	McGuire	Port-a-Spa	Paid in Full	Standard	\$ 8,560	\$ 8,560	\$ -
25	2012-020	1/6/2012	Deanne	McGuire	Port-a-Spa	Finance	Promotion	\$ 26,500	\$ 6,625	\$ 19,875
26	2012-021	1/6/2012	Oleta	Fairbanks	Port-a-Spa	Finance	Standard	\$ 5,000	\$ 1,250	\$ 3,750
27	2012-022	1/6/2012	Seth	Prescott	Serenity Spas	Finance	Promotion	\$ 8,560	\$ 2,140	\$ 6,420
28	2012-023	1/7/2012	Seth	Prescott	Port-a-Spa	Finance	Promotion	\$ 5,000	\$ 1,250	\$ 3,750
29	2012-024	1/7/2012	Grant	Ingersoll	Serenity Spas	Paid in Full	Standard	\$ 5,400	\$ 5,400	\$ -
30	2012-025	1/8/2012	Oleta	Fairbanks	Serenity Spas	Finance	Standard	\$ 3,240	\$ 810	\$ 2,430
31	2012-026	1/9/2012	Deanne	McGuire	Port-a-Spa	Finance	Promotion	\$ 7,400	\$ 1,850	\$ 5,550
32	2012-027	1/9/2012	Grant	Ingersoll	Port-a-Spa	Finance	Promotion	\$ 22,000	\$ 5,500	\$ 16,500
33	2012-028	1/9/2012	Grant	Ingersoll	The Original Hot Tub	Paid in Full	Promotion	\$ 3,240	\$ 3,240	\$ -
34	2012-029	1/10/2012	Seth	Prescott	The Original Hot Tub	Paid in Full	Standard	\$ 7,690	\$ 7,690	\$ -
35	2012-030	1/10/2012	Deanne	McGuire	Serenity Spas	Finance	Promotion	\$ 6,000	\$ 1,500	\$ 4,500
36	2012-031	1/11/2012	Deanne	McGuire	The Original Hot Tub	Finance	Promotion	\$ 7,500	\$ 1,875	\$ 5,625
37	2012-032	1/11/2012	Oleta	Fairbanks	Port-a-Spa	Paid in Full	Promotion	\$ 7,500	\$ 7,500	\$ -
38	2012-033	1/11/2012	Seth	Prescott	Serenity Spas	Paid in Full	Promotion	\$ 4,650	\$ 4,650	\$ -
39	2012-034	1/12/2012	Deanne	McGuire	Serenity Spas	Finance	Standard	\$ 6,700	\$ 1,675	\$ 5,025
40	2012-035	1/13/2012	Grant	Ingersoll	The Original Hot Tub	Finance	Promotion	\$ 6,540	\$ 1,635	\$ 4,905
41	2012-036	1/14/2012	Grant	Ingersoll	Serenity Spas	Paid in Full	Promotion	\$ 4,800	\$ 4,800	\$ -
42	2012-037	1/15/2012	Deanne	McGuire	Port-a-Spa	Paid in Full	Standard	\$ 7,200	\$ 7,200	\$ -
43	2012-038	1/16/2012	Oleta	Fairbanks	Serenity Spas	Paid in Full	Standard	\$ 32,000	\$ 32,000	\$ -
44	2012-039	1/17/2012	Seth	Prescott	Port-a-Spa	Finance	Standard	\$ 12,000	\$ 3,000	\$ 9,000
45	2012-040	1/18/2012	Deanne	McGuire	Port-a-Spa	Finance	Standard	\$ 3,200	\$ 800	\$ 2,400
46	2012-041	1/18/2012	Seth	Prescott	The Original Hot Tub	Finance	Standard	\$ 12,350	\$ 3,088	\$ 9,263
47	2012-042	1/18/2012	Deanne	McGuire	Port-a-Spa	Paid in Full	Promotion	\$ 18,000	\$ 18,000	\$ -
48	2012-043	1/19/2012	Deanne	McGuire	Port-a-Spa	Paid in Full	Standard	\$ 4,500	\$ 4,500	\$ -
49	2012-044	1/19/2012	Grant	Ingersoll	Port-a-Spa	Paid in Full	Standard	\$ 12,500	\$ 12,500	\$ -
50	2012-045	1/20/2012	Oleta	Fairbanks	Serenity Spas	Finance	Promotion	\$ 7,500	\$ 1,875	\$ 5,625
51	2012-046	1/21/2012	Grant	Ingersoll	The Original Hot Tub	Finance	Standard	\$ 3,450	\$ 863	\$ 2,588
52	2012-047	1/21/2012	Oleta	Fairbanks	Port-a-Spa	Finance	Promotion	\$ 8,000	\$ 2,000	\$ 6,000
53	2012-048	1/21/2012	Oleta	Fairbanks	The Original Hot Tub	Finance	Standard	\$ 17,500	\$ 4,375	\$ 13,125
54	2012-049	1/21/2012	Seth	Prescott	Serenity Spas	Finance	Standard	\$ 5,600	\$ 1,400	\$ 4,200

# Freezing Rows and Columns

- **Freezing** keeps rows and columns visible during scrolling
- View tab / Window group / Freeze Panes button gives you these choices:

Option	Description
Freeze Panes	Keeps both rows and columns above or to the left of the active cell visible.
Freeze Top Row	Keeps only the top row visible.
Freeze First Column	Keeps only the first column visible.

# Freezing Rows and Columns

- Figure 4.2 illustrates the effect of freezing rows 1 – 5 and columns A – B

		The Spa Experts								
		Monthly Transactions								
Down Payment Requirement:										
Transaction Number	Date	Manufacturer	Payment Type	Transaction	Amount	Down Payment	Owed			
15	2012-010	1/4/2012	Port-a-Spa	Finance	Standard	\$ 10,000	\$ 2,500	\$ 7,500		
16	2012-011	1/4/2012	Port-a-Spa	Finance	Standard	\$ 10,000	\$ 2,500	\$ 7,500		
17	2012-012	1/4/2012	Port-a-Spa	Paid in Full	Standard	\$ 4,550	\$ 4,550	\$ -		
18	2012-013	1/4/2012	Serenity Spas	Paid in Full	Promotion	\$ 8,490	\$ 8,490	\$ -		
19	2012-014	1/4/2012	The Original Hot Tub	Paid in Full	Standard	\$ 5,432	\$ 5,432	\$ -		
20	2012-015	1/4/2012	Serenity Spas	Paid in Full	Promotion	\$ 7,450	\$ 7,450	\$ -		
21	2012-016	1/4/2012	The Original Hot Tub	Paid in Full	Standard	\$ 5,432	\$ 5,432	\$ -		
22	2012-017	1/4/2012	Serenity Spas	Paid in Full	Promotion	\$ 6,780	\$ 6,780	\$ -		
23	2012-018	1/5/2012	Port-a-Spa	Finance	Standard	\$ 7,450	\$ 1,863	\$ 5,588		
24	2012-019	1/5/2012	Port-a-Spa	Paid in Full	Standard	\$ 8,560	\$ 8,560	\$ -		
25	2012-020	1/6/2012	Port-a-Spa	Finance	Promotion	\$ 26,500	\$ 6,625	\$ 19,875		
26	2012-021	1/6/2012	Port-a-Spa	Finance	Standard	\$ 5,000	\$ 1,250	\$ 3,750		
27	2012-022	1/6/2012	Serenity Spas	Finance	Promotion	\$ 8,560	\$ 2,140	\$ 6,420		
28	2012-023	1/7/2012	Port-a-Spa	Finance	Promotion	\$ 5,000	\$ 1,250	\$ 3,750		
29	2012-024	1/7/2012	Serenity Spas	Paid in Full	Standard	\$ 5,400	\$ 5,400	\$ -		
30	2012-025	1/8/2012	Serenity Spas	Finance	Standard	\$ 3,240	\$ 810	\$ 2,430		
31	2012-026	1/9/2012	Port-a-Spa	Finance	Promotion	\$ 7,400	\$ 1,850	\$ 5,550		
32	2012-027	1/9/2012	Port-a-Spa	Finance	Promotion	\$ 22,000	\$ 5,500	\$ 16,500		
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34	2012-029	1/10/2012	The Original Hot Tub	Paid in Full	Standard	\$ 7,690	\$ 7,690	\$ -		
35	2012-030	1/10/2012	Serenity Spas	Finance	Promotion	\$ 6,000	\$ 1,500	\$ 4,500		
36	2012-031	1/11/2012	The Original Hot Tub	Finance	Promotion	\$ 7,500	\$ 1,875	\$ 5,625		
37	2012-032	1/11/2012	Port-a-Spa	Paid in Full	Promotion	\$ 7,500	\$ 7,500	\$ -		
38	2012-033	1/11/2012	Serenity Spas	Paid in Full	Promotion	\$ 4,650	\$ 4,650	\$ -		

Click cell below and to the right of columns & rows to be frozen.  
View tab / Window group / Freeze Panes ...

# Excel Tables

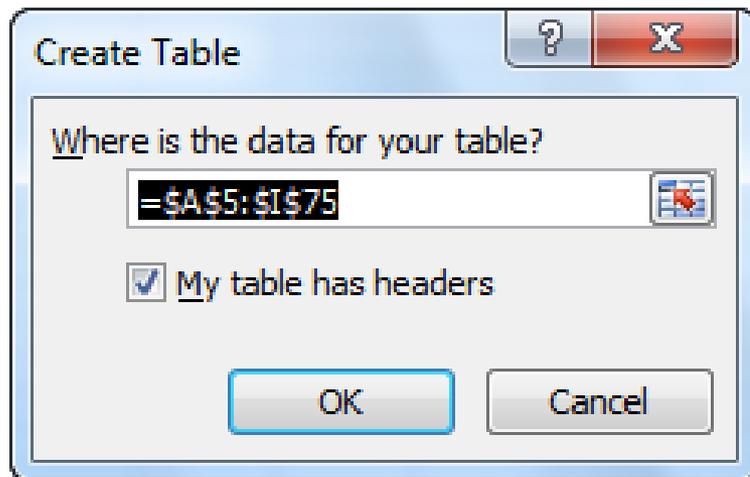
- A **table** is a structured range of related data formatted to enable data management and analysis
- Excel tables offer many features not available to regular ranges
  - Calculated columns cause a formula or function written in a column to be automatically copied down the column
  - Total rows allow easy calculation of sum, average, count, min, max, ...
  - Can use column header name in formulae

# Table Design

- A **field** is an individual piece of data
  - Field names appear in the top row as column headings
  - Field names should be short, but descriptive
- A **record** is a complete set of data for an entity
  - Each record is listed in a row of the table
  - **Do not insert blank rows in the table**

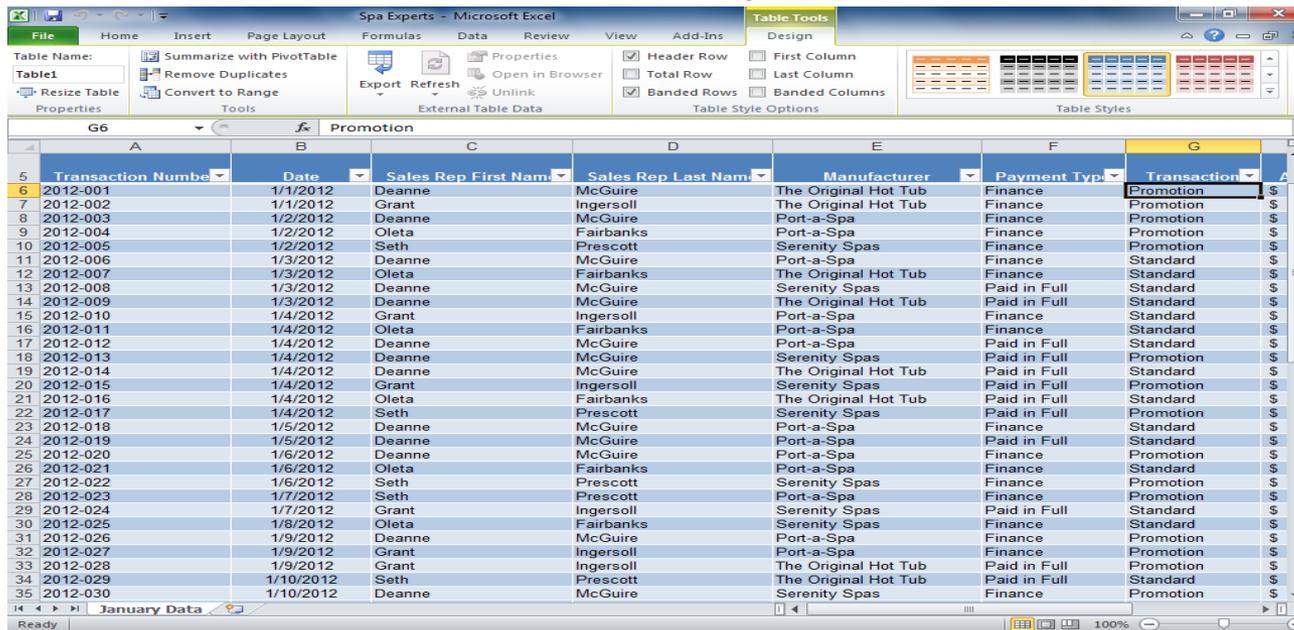
# Creating a Table

- A table can easily be created from existing data



# Creating a Table

- The **Design** tab on the **Table Tools** contextual tab opens when the table is selected



- *Demonstration...*
- Click in data range. Insert tab / Tables group / Table
- Check range, tick “table has headers” if necessary. Click OK.

# Adding Records

- Add a new record at the bottom of the table by clicking in the row under the table
- Add a new record within the table by clicking in the record below the insertion point
  - Click the **Home** tab
  - Click the **Insert** arrow in the **Cells** group
  - Select **Insert Table Rows Above**

# Editing and Deleting Records

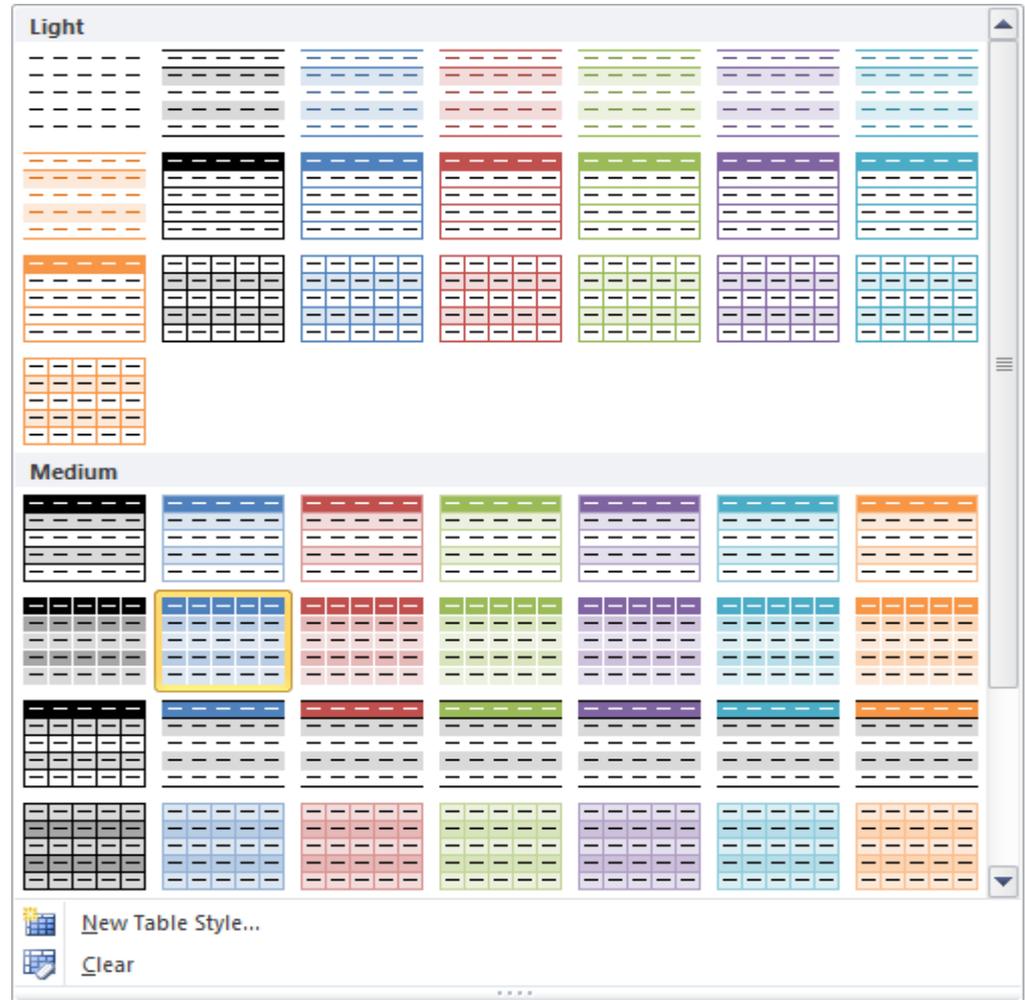
- Data within a table record can be edited using the same techniques as those for a regular cell
- Deleting a record removes it from the table
  - Click the **Home** tab
  - Click the **Delete** arrow in the **Cells** group
  - Select **Delete Table Rows**

# Deleting Records, continued

- Delete records with *extreme* caution.
- Excel has a procedure for removing duplicate records.  
(Table Tools / Design / Tools / Remove Duplicates)  
However...
- If you have two records with the same transaction number but different details, and you delete based on duplicate transaction number, how do you know that Excel will pick the correct one to delete? Excel does give you the chance to specify that only identical records should have their duplicate removed.

# Applying a Table Style

- A **table style** controls the fill color of the header row, columns, and records



# Table Style Options

- The **Table Styles Options** group on the **Design** tab contains check boxes to further format the table

Check Box	Action
Header Row	Displays the header row at the top of the table.
Total Row	Displays a total row at the bottom of the table.
First Column	Applies a different format to the first column.
Last Column	Applies a different format to the last column.
Banded Rows	Displays alternate fill colors for even and odd rows.
Banded Columns	Displays alternate fill colors for even and odd columns.

- Table Tools / Table Styles / More button
- *Demonstration ...*

# Table Manipulation and Aggregation: Sorting Data

- **Sorting** arranges records in a table
  - Sort on one column
  - Sort on multiple columns
- Records can be sorted into ascending or descending order

# Sorting by One Column

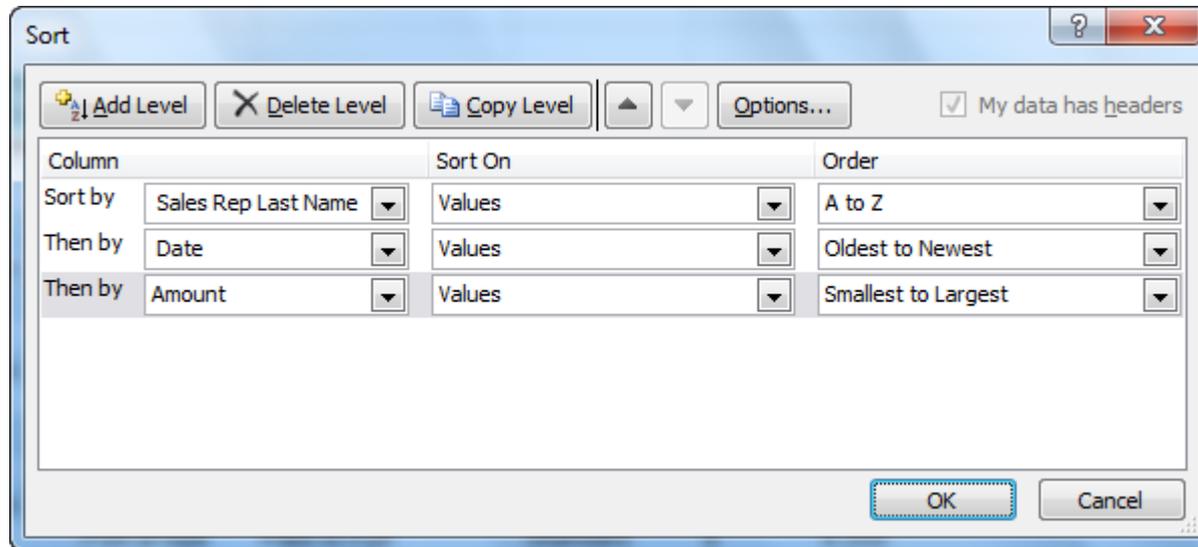
- Excel offers several ways to sort a single column

Data type	Options	Explanation
Text	Sort A to Z	Arranges data in alphabetical order.
	Sort Z to A	Arranges data in reverse alphabetical order.
Dates	Sort Oldest to Newest	Displays data in chronological order.
	Sort Newest to Oldest	Displays data in reverse chronological order.
Values	Sort Smallest to Largest	Arranges values in sequential order.
	Sort Largest to Smallest	Arranges values in descending order.

- Home tab / Editing group / Sort & Filter, *or*
- Data tab / Sort & Filter / Sort A to Z | Sort Z to A | Sort

# Sorting by Multiple Columns

- **Multiple level sorts** permits differentiation among records with duplicate data in the first sort.

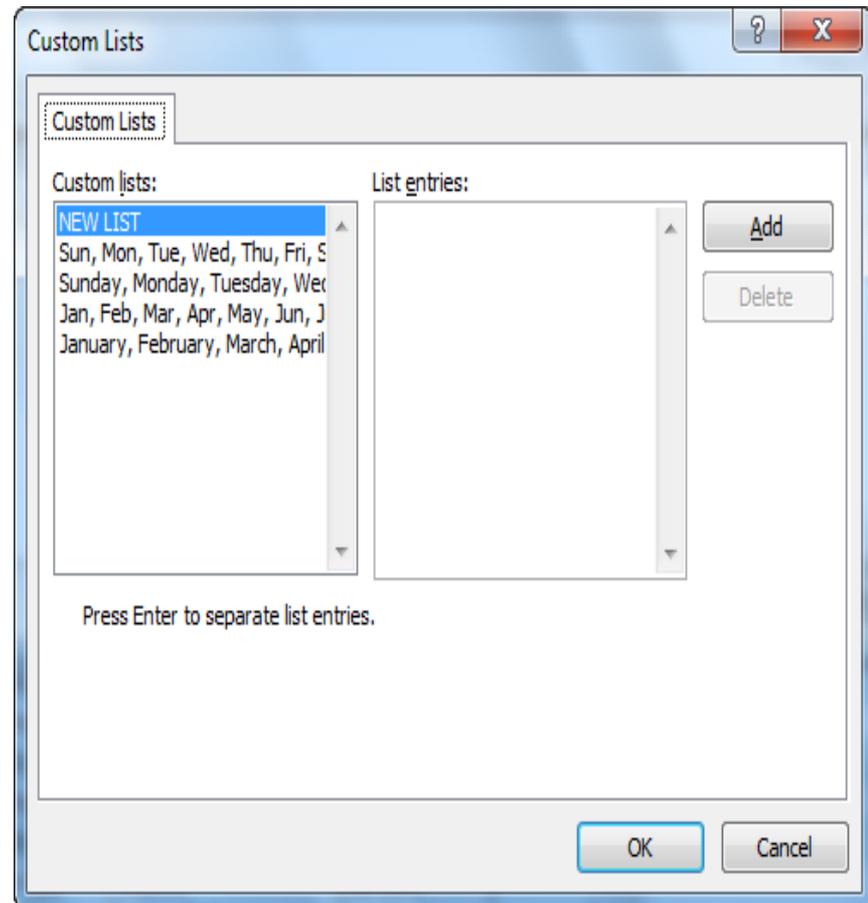


## Demo...

- Click in table, click in Data / Sort&Filter / Sort
- Click Sort By arrow, select Payment Type, click Add Level
- Click Then By arrow, select Transactions, click Add Level
- Click Then By, Amount, Order arrow, Largest to Smallest, OK.

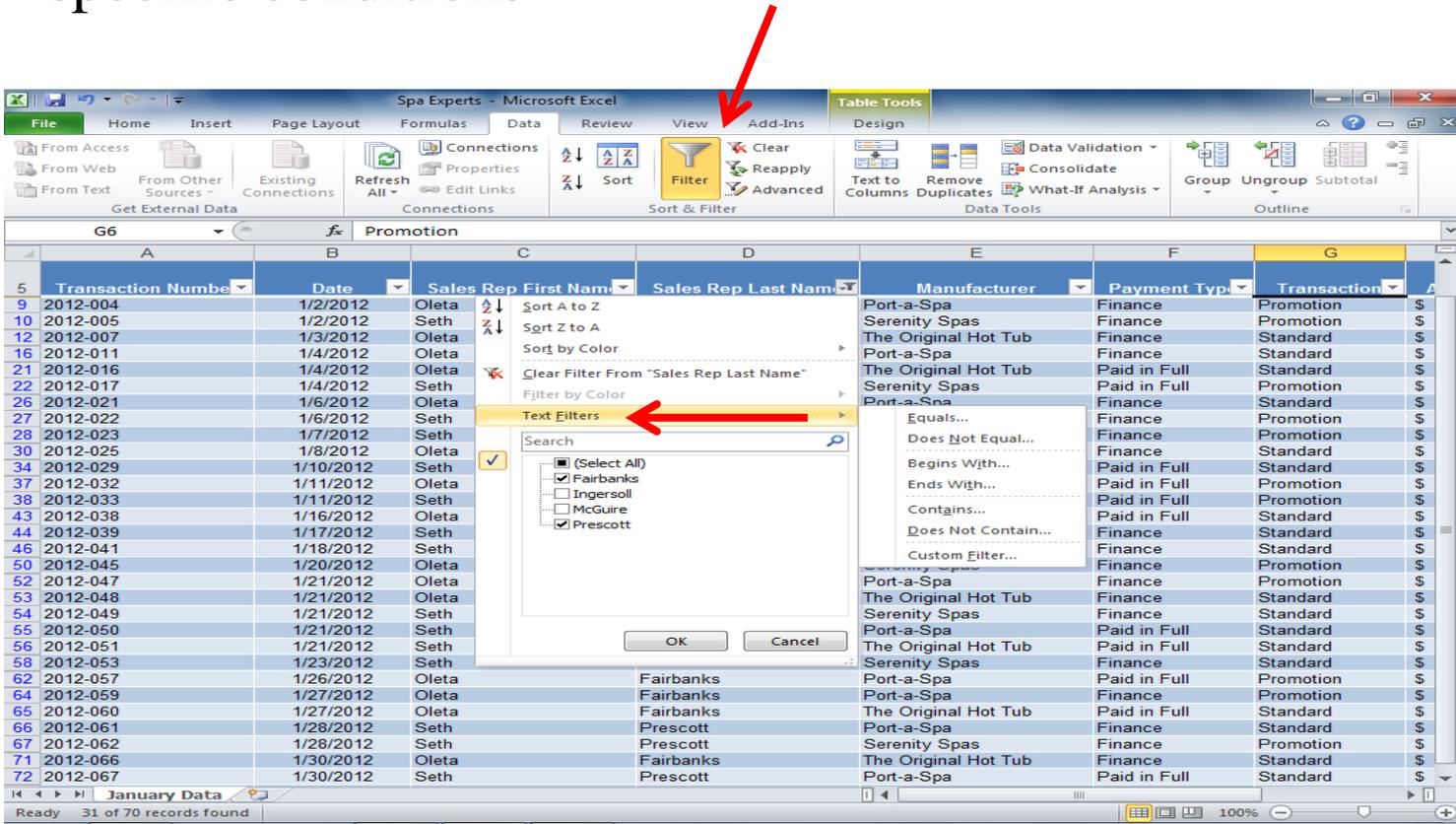
# Creating a Custom Sort

- A **custom sort** can be created to arrange values in a customized fashion
- See textbook for details.



# Filtering Data

- **Filtering** is the process of displaying only records that meet specific conditions

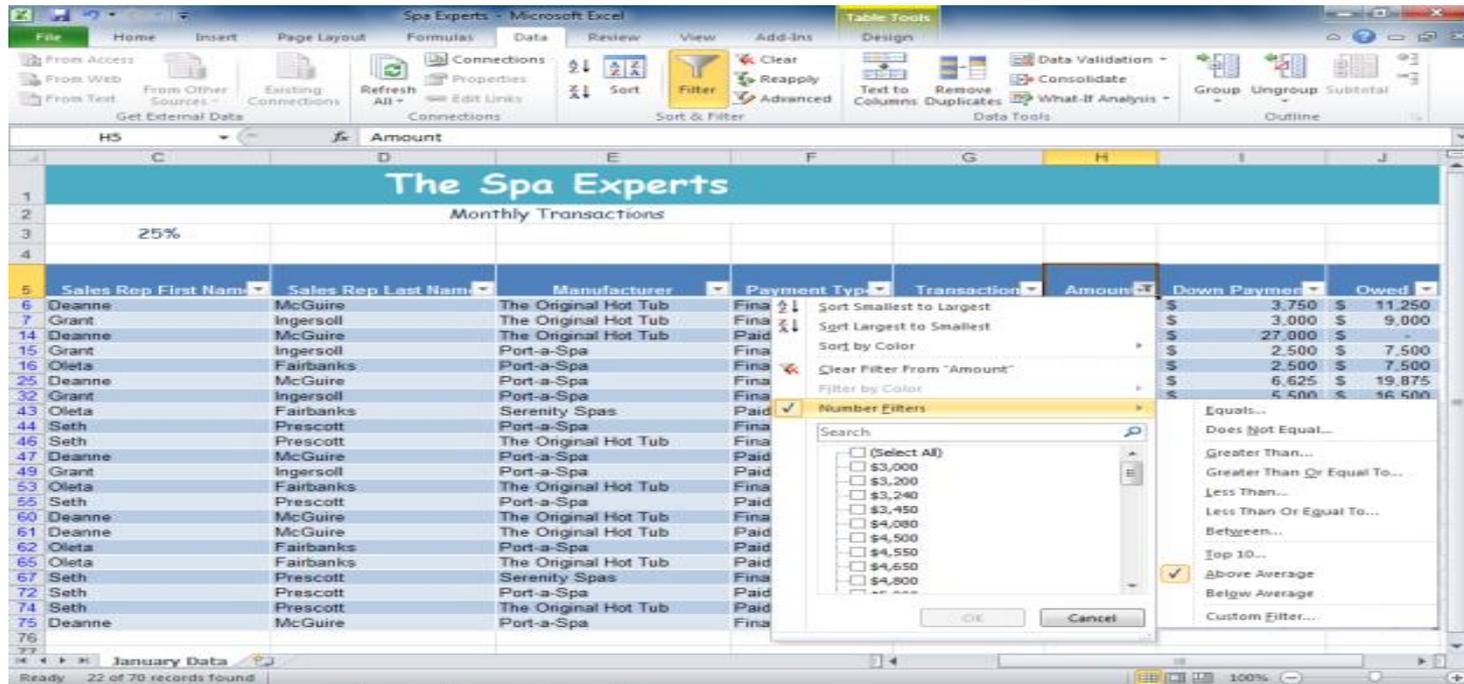


# Filtering Data - Demo

- Click Sales Rep Last Name filter arrow
- Click (Select all) check box to deselect
- Click the McGuire check box, click OK
- Now only McGuire records show (27/70)
- Click Manufacturer filter arrow
- Click Serenity Spas check box to deselect, click OK
- Now only McGuire sales of spas other than Serenity show (22/70)

# Filtering Numeric Data

- **Numeric filters** can be applied to display a range of values



- Select H6:H75, Click Amount filter arrow
- Point to Number Filters, select Greater Than Or Equal To, type 10000 in box to right, click OK
- Down to 7 spas sold that meet these filters.

# Using Structured References

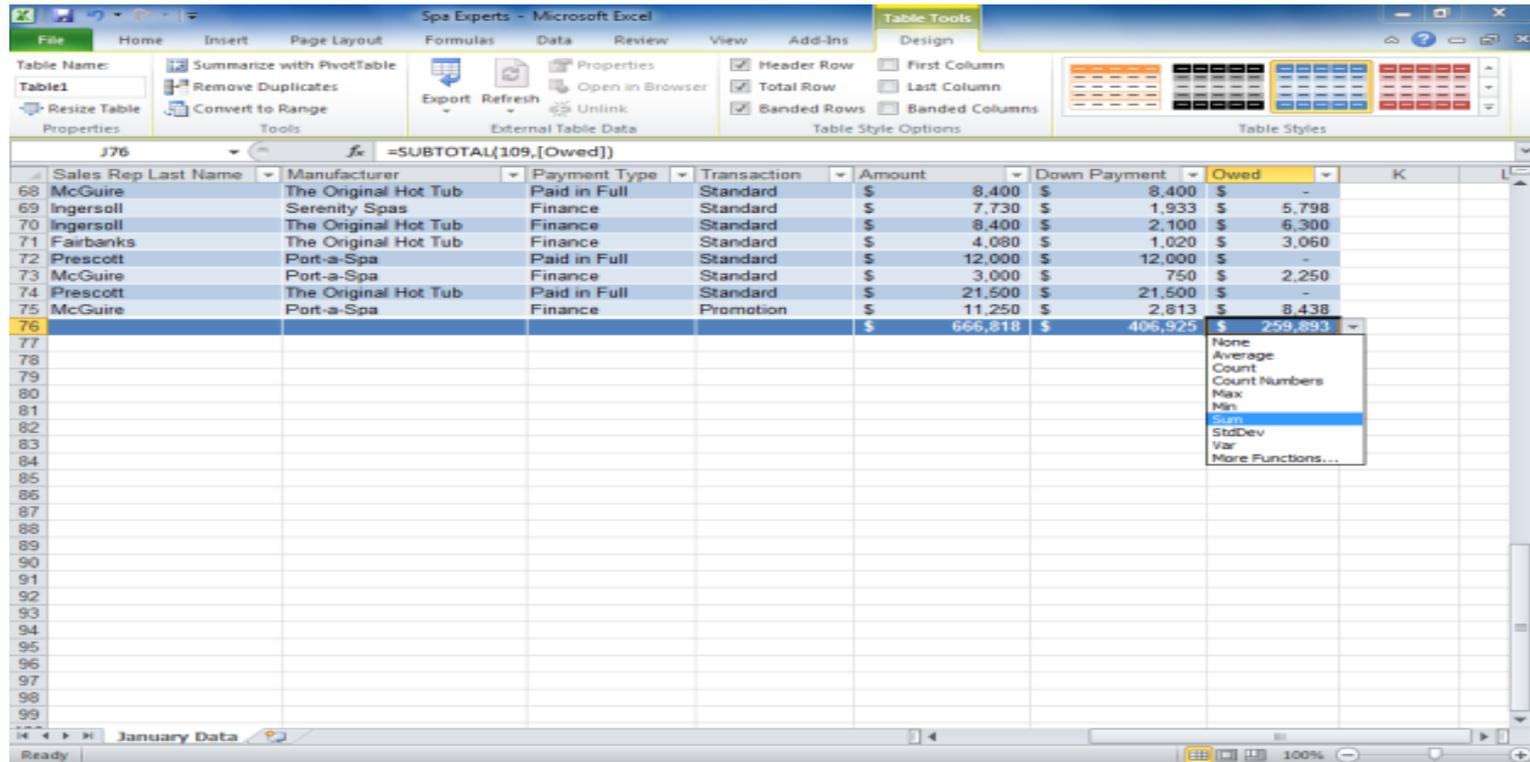
- A **structured reference** is a tag or table field name used in a formula or function

	D	E	F	G	H	I	J	K	L
5	Sales Rep Last Name	Manufacturer	Payment Type	Transaction	Amount	Down Payment	Owed		
6	McGuire	The Original Hot Tub	Finance	Promotion	\$ 15,000	\$ 3,750	=		
7	Ingersoll	The Original Hot Tub	Finance	Promotion	\$ 12,000	\$ 3,000			
8	McGuire	Port-a-Spa	Finance	Promotion	\$ 3,240	\$ 810			
9	Fairbanks	Port-a-Spa	Finance	Promotion	\$ 4,080	\$ 1,020			
10	Prescott	Serenity Spas	Finance	Promotion	\$ 5,432	\$ 1,358			
11	McGuire	Port-a-Spa	Finance	Standard	\$ 6,780	\$ 1,695			
12	Fairbanks	The Original Hot Tub	Finance	Standard	\$ 5,432	\$ 1,358			
13	McGuire	Serenity Spas	Paid in Full	Standard	\$ 6,780	\$ 6,780			
14	McGuire	The Original Hot Tub	Paid in Full	Standard	\$ 27,000	\$ 27,000			
15	Ingersoll	Port-a-Spa	Finance	Standard	\$ 10,000	\$ 2,500			
16	Fairbanks	Port-a-Spa	Finance	Standard	\$ 10,000	\$ 2,500			
17	McGuire	Port-a-Spa	Paid in Full	Standard	\$ 4,550	\$ 4,550			

- Type “**=[\[Amount\]](#)-[\[Down Payment\]](#)” in J6, rather than “**=[H6](#)-[I6](#)”**”.**
- Computation is done for whole column.

# Creating a *Total* Row

- A **total row** appears as the last row of a table and offers statistical functions



The screenshot shows the Microsoft Excel interface with the 'Table Tools Design' tab selected. The 'Table Style Options' group has the 'Total Row' checkbox checked. The table below has a total row at row 76. A dropdown menu is open for the 'Owed' cell in the total row, showing statistical functions like Sum, Average, Count, etc.

Sales Rep Last Name	Manufacturer	Payment Type	Transaction	Amount	Down Payment	Owed
68 McGuire	The Original Hot Tub	Paid in Full	Standard	\$ 8,400	\$ 8,400	\$ -
69 Ingersoll	Serenity Spas	Finance	Standard	\$ 7,730	\$ 1,933	\$ 5,798
70 Ingersoll	The Original Hot Tub	Finance	Standard	\$ 8,400	\$ 2,100	\$ 6,300
71 Fairbanks	The Original Hot Tub	Finance	Standard	\$ 4,080	\$ 1,020	\$ 3,060
72 Prescott	Port-a-Spa	Paid in Full	Standard	\$ 12,000	\$ 12,000	\$ -
73 McGuire	Port-a-Spa	Finance	Standard	\$ 3,000	\$ 750	\$ 2,250
74 Prescott	The Original Hot Tub	Paid in Full	Standard	\$ 21,500	\$ 21,500	\$ -
75 McGuire	Port-a-Spa	Finance	Promotion	\$ 11,250	\$ 2,813	\$ 8,438
76				\$ 666,818	\$ 406,925	\$ 259,893

- Table Tools Design tab / Table Style Options group / Total Row check box.

# Conditional Formatting

- Highlights cells whose contents meet some condition.
- Home tab / Styles group / Conditional formatting

Conditional Formatting	Description
Highlight Cell Rules	Highlights cells with a fill color, font color or border if the cell value satisfies the rule.
Top/Bottom Rules	Formats cells with values in some top number or percentage.
Data Bars	Applies a gradient or filled bar in which the width of the bar represents the cell's value with respect to other cells.
Color Scales	Formats different cells with different colors, assigning one color to lowest and highest groups and gradient colors in between values.
Icon Sets	Inserts an icon in a cell to indicate values compared to each other.

# Applying the Highlight Cells Rule

The screenshot shows the Microsoft Excel interface with the 'Highlight Cells Rules' menu open. The spreadsheet contains a table of monthly transactions for 'The Spa Experts'. The table has columns for Date, Sales Rep First Name, Sales Rep Last Name, Manufacturer, and Payment Type. The 'Manufacturer' column is highlighted in red for rows where the manufacturer is 'Serenity Spas'. The 'Highlight Cells Rules' menu is open, showing options like 'Greater Than...', 'Less Than...', 'Between...', 'Equal To...', 'Text that Contains...', 'A Date Occurring...', and 'Duplicate Values...'. The 'New Rule...' option is selected, and a 'More Rules...' dialog box is visible.

Date	Sales Rep First Name	Sales Rep Last Name	Manufacturer	Payment Type
1/10/2012	Deanne	McGuire	Serenity Spas	Finance
1/11/2012	Deanne	McGuire	The Original Hot Tub	Finance
1/11/2012	Oleta	Fairbanks	Port-a-Spa	Paid in Full
1/11/2012	Seth	Prescott	Serenity Spas	Paid in Full
1/12/2012	Deanne	McGuire	Serenity Spas	Finance
1/13/2012	Grant	Ingersoll	The Original Hot Tub	Finance
1/14/2012	Grant	Ingersoll	Serenity Spas	Paid in Full
1/15/2012	Deanne	McGuire	Port-a-Spa	Paid in Full
1/16/2012	Oleta	Fairbanks	Serenity Spas	Paid in Full
1/17/2012	Seth	Prescott	Port-a-Spa	Finance
1/18/2012	Deanne	McGuire	Port-a-Spa	Finance
1/18/2012	Seth	Prescott	The Original Hot Tub	Finance
1/18/2012	Deanne	McGuire	Port-a-Spa	Paid in Full
1/19/2012	Deanne	McGuire	Port-a-Spa	Paid in Full
1/19/2012	Grant	Ingersoll	Port-a-Spa	Paid in Full
1/20/2012	Oleta	Fairbanks	Serenity Spas	Finance
1/21/2012	Grant	Ingersoll	The Original Hot Tub	Finance
1/21/2012	Oleta	Fairbanks	Port-a-Spa	Finance
1/21/2012	Oleta	Fairbanks	The Original Hot Tub	Finance
1/21/2012	Seth	Prescott	Serenity Spas	Finance
1/21/2012	Seth	Prescott	Port-a-Spa	Paid in Full
1/21/2012	Seth	Prescott	The Original Hot Tub	Paid in Full
1/22/2012	Deanne	McGuire	Serenity Spas	Paid in Full
1/23/2012	Seth	Prescott	Serenity Spas	Finance

- *Demonstration...*

# Highlight Cells Demo

- *Demonstration...*
- Select rows 6-75 in January Range worksheet
- Click Home / Fill color arrow(=bucket) / No Fill, if necessary
- Select D6:D75, Home / Styles / Conditional Formatting / Highlight Cells Rules / Text That Contains
- Type Fairbanks in the box, click the With arrow, select Green Fill with Greet text, click OK.
- **Next** select H6:H75, Conditional Formatting / Top/Bottom Rules / Top 10 Items
- Click arrow to display 5, click With arrow, select Light Red Fill, OK
- **Next** select I6:I75, Conditional Formatting / Data Bars and select Purple Data Bar in the Gradient Fill section.
- Save the workbook. Always.
- More in textbook (p 273-4). More in loan-table workbook.

# Applying the Top/Bottom Rules

	B	C	D	E	F	G	H	I	J	K
31	1/9/2012	Deanne	McGuire	Port-a-Spa	Finance	Promotion	\$ 7,400	\$ 1,850	\$ 5,550	
32	1/9/2012	Grant	Ingersoll	Port-a-Spa	Finance	Promotion	\$ 22,000	\$ 5,500	\$ 16,500	
33	1/9/2012	Grant	Ingersoll	The Original Hot Tub	Paid in Full	Promotion	\$ 3,240	\$ 3,240	\$ -	
34	1/10/2012	Seth	Prescott	Port-a-Spa	Finance	Promotion	\$ 7,690	\$ 7,690	\$ -	
35	1/10/2012	Deanne	McGuire	Port-a-Spa	Finance	Promotion	\$ 6,000	\$ 1,500	\$ 4,500	
36	1/11/2012	Deanne	McGuire	Port-a-Spa	Finance	Promotion	\$ 7,500	\$ 1,875	\$ 5,625	
37	1/11/2012	Oleta	Fairbanks	Port-a-Spa	Finance	Promotion	\$ 7,500	\$ 7,500	\$ -	
38	1/11/2012	Seth	Prescott	Port-a-Spa	Finance	Promotion	\$ 4,650	\$ 4,650	\$ -	
39	1/12/2012	Deanne	McGuire	Port-a-Spa	Finance	Promotion	\$ 6,700	\$ 1,675	\$ 5,025	
40	1/13/2012	Grant	Ingersoll	Port-a-Spa	Finance	Promotion	\$ 6,540	\$ 1,635	\$ 4,905	
41	1/14/2012	Grant	Ingersoll	Port-a-Spa	Finance	Promotion	\$ 4,800	\$ 4,800	\$ -	
42	1/15/2012	Deanne	McGuire	Port-a-Spa	Paid in Full	Standard	\$ 7,200	\$ 7,200	\$ -	
43	1/16/2012	Oleta	Fairbanks	Serenity Spas	Paid in Full	Standard	\$ 32,000	\$ 32,000	\$ -	
44	1/17/2012	Seth	Prescott	Port-a-Spa	Finance	Standard	\$ 12,000	\$ 3,000	\$ 9,000	
45	1/18/2012	Deanne	McGuire	Port-a-Spa	Finance	Standard	\$ 3,200	\$ 800	\$ 2,400	
46	1/18/2012	Seth	Prescott	The Original Hot Tub	Finance	Standard	\$ 12,350	\$ 3,088	\$ 9,263	
47	1/18/2012	Deanne	McGuire	Port-a-Spa	Paid in Full	Promotion	\$ 18,000	\$ 18,000	\$ -	
48	1/19/2012	Deanne	McGuire	Port-a-Spa	Paid in Full	Standard	\$ 4,500	\$ 4,500	\$ -	
49	1/19/2012	Grant	Ingersoll	Port-a-Spa	Paid in Full	Standard	\$ 12,500	\$ 12,500	\$ -	
50	1/20/2012	Oleta	Fairbanks	Serenity Spas	Finance	Promotion	\$ 7,500	\$ 1,875	\$ 5,625	
51	1/21/2012	Grant	Ingersoll	The Original Hot Tub	Finance	Standard	\$ 3,450	\$ 863	\$ 2,588	
52	1/21/2012	Oleta	Fairbanks	Port-a-Spa	Finance	Promotion	\$ 8,000	\$ 2,000	\$ 6,000	
53	1/21/2012	Oleta	Fairbanks	The Original Hot Tub	Finance	Standard	\$ 17,500	\$ 4,375	\$ 13,125	
54	1/21/2012	Seth	Prescott	Serenity Spas	Finance	Standard	\$ 5,600	\$ 1,400	\$ 4,200	
55	1/21/2012	Seth	Prescott	Port-a-Spa	Paid in Full	Standard	\$ 18,500	\$ 18,500	\$ -	
56	1/21/2012	Seth	Prescott	The Original Hot Tub	Paid in Full	Standard	\$ 5,400	\$ 5,400	\$ -	
57	1/22/2012	Deanne	McGuire	Serenity Spas	Paid in Full	Standard	\$ 6,540	\$ 6,540	\$ -	
58	1/23/2012	Seth	Prescott	Serenity Spas	Finance	Standard	\$ 5,600	\$ 1,400	\$ 4,200	
59	1/24/2012	Deanne	McGuire	Port-a-Spa	Finance	Promotion	\$ 6,000	\$ 1,500	\$ 4,500	
60	1/25/2012	Deanne	McGuire	The Original Hot Tub	Finance	Promotion	\$ 12,500	\$ 3,125	\$ 9,375	
61	1/26/2012	Deanne	McGuire	The Original Hot Tub	Paid in Full	Promotion	\$ 22,500	\$ 22,500	\$ -	
62	1/26/2012	Oleta	Fairbanks	Port-a-Spa	Paid in Full	Promotion	\$ 25,000	\$ 25,000	\$ -	

Top 10 Items

Format cells that rank in the TOP:

3 with Light Red Fill with Dark Red Text

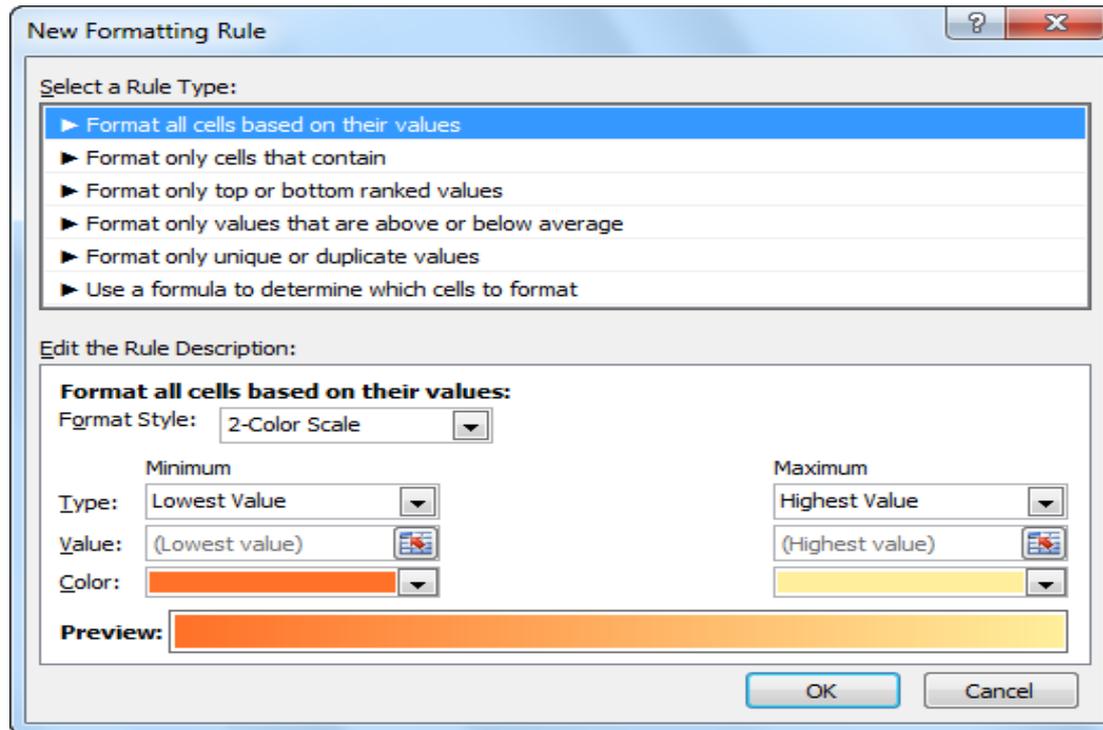
OK Cancel

# Displaying Data Bars, Color Scales, and Icon Sets

	B	C	D	E	F	G	H	I	J	K
5	Date	Sales Rep First Name	Sales Rep Last Name	Manufacturer	Payment Type	Transaction	Amount	Down Payment	Owed	
6	1/1/2012	Deanne	McGuire	The Original Hot Tub	Finance	Promotion	\$ 15,000	\$ 3,750	▲ \$ 11,250	
7	1/1/2012	Grant	Ingersoll	The Original Hot Tub	Finance	Promotion	\$ 12,000	\$ 3,000	▲ \$ 9,000	
8	1/2/2012	Deanne	McGuire	Port-a-Spa	Finance	Promotion	\$ 3,240	\$ 810	◆ \$ 2,430	
9	1/2/2012	Oleta	Fairbanks	Port-a-Spa	Finance	Promotion	\$ 4,080	\$ 1,020	◆ \$ 3,060	
10	1/2/2012	Seth	Prescott	Serenity Spas	Finance	Promotion	\$ 5,432	\$ 1,358	◆ \$ 4,074	
11	1/3/2012	Deanne	McGuire	Port-a-Spa	Finance	Standard	\$ 6,780	\$ 1,695	◆ \$ 5,085	
12	1/3/2012	Oleta	Fairbanks	The Original Hot Tub	Finance	Standard	\$ 5,432	\$ 1,358	◆ \$ 4,074	
13	1/3/2012	Deanne	McGuire	Serenity Spas	Paid in Full	Standard	\$ 6,780	\$ 6,780	◆ \$ -	
14	1/3/2012	Deanne	McGuire	The Original Hot Tub	Paid in Full	Standard	\$ 27,000	\$ 27,000	◆ \$ -	
15	1/4/2012	Grant	Ingersoll	Port-a-Spa	Finance	Standard	\$ 10,000	\$ 2,500	▲ \$ 7,500	
16	1/4/2012	Oleta	Fairbanks	Port-a-Spa	Finance	Standard	\$ 10,000	\$ 2,500	▲ \$ 7,500	
17	1/4/2012	Deanne	McGuire	Port-a-Spa	Paid in Full	Standard	\$ 4,550	\$ 4,550	◆ \$ -	
18	1/4/2012	Deanne	McGuire	Serenity Spas	Paid in Full	Promotion	\$ 8,490	\$ 8,490	◆ \$ -	
19	1/4/2012	Deanne	McGuire	The Original Hot Tub	Paid in Full	Standard	\$ 5,432	\$ 5,432	◆ \$ -	
20	1/4/2012	Grant	Ingersoll	Serenity Spas	Paid in Full	Promotion	\$ 7,450	\$ 7,450	◆ \$ -	
21	1/4/2012	Oleta	Fairbanks	The Original Hot Tub	Paid in Full	Standard	\$ 5,432	\$ 5,432	◆ \$ -	
22	1/4/2012	Seth	Prescott	Serenity Spas	Paid in Full	Promotion	\$ 6,780	\$ 6,780	◆ \$ -	
23	1/5/2012	Deanne	McGuire	Port-a-Spa	Finance	Standard	\$ 7,450	\$ 1,863	◆ \$ 5,588	
24	1/5/2012	Deanne	McGuire	Port-a-Spa	Paid in Full	Standard	\$ 8,560	\$ 8,560	◆ \$ -	
25	1/6/2012	Deanne	McGuire	Port-a-Spa	Finance	Promotion	\$ 26,500	\$ 6,625	● \$ 19,875	
26	1/6/2012	Oleta	Fairbanks	Port-a-Spa	Finance	Standard	\$ 5,000	\$ 1,250	◆ \$ 3,750	
27	1/6/2012	Seth	Prescott	Serenity Spas	Finance	Promotion	\$ 8,560	\$ 2,140	◆ \$ 6,420	
28	1/7/2012	Seth	Prescott	Port-a-Spa	Finance	Promotion	\$ 5,000	\$ 1,250	◆ \$ 3,750	
29	1/7/2012	Grant	Ingersoll	Serenity Spas	Paid in Full	Standard	\$ 5,400	\$ 5,400	◆ \$ -	
30	1/8/2012	Oleta	Fairbanks	Serenity Spas	Finance	Standard	\$ 3,240	\$ 810	◆ \$ 2,430	
31	1/9/2012	Deanne	McGuire	Port-a-Spa	Finance	Promotion	\$ 7,400	\$ 1,850	◆ \$ 5,550	
32	1/9/2012	Grant	Ingersoll	Port-a-Spa	Finance	Promotion	\$ 22,000	\$ 5,500	● \$ 16,500	
33	1/9/2012	Grant	Ingersoll	The Original Hot Tub	Paid in Full	Promotion	\$ 3,240	\$ 3,240	◆ \$ -	
34	1/10/2012	Seth	Prescott	The Original Hot Tub	Paid in Full	Standard	\$ 7,690	\$ 7,690	◆ \$ -	
35	1/10/2012	Deanne	McGuire	Serenity Spas	Finance	Promotion	\$ 6,000	\$ 1,500	◆ \$ 4,500	

# Creating a New Rule

- The **New Formatting Rule** dialog box is used to create a customized rule

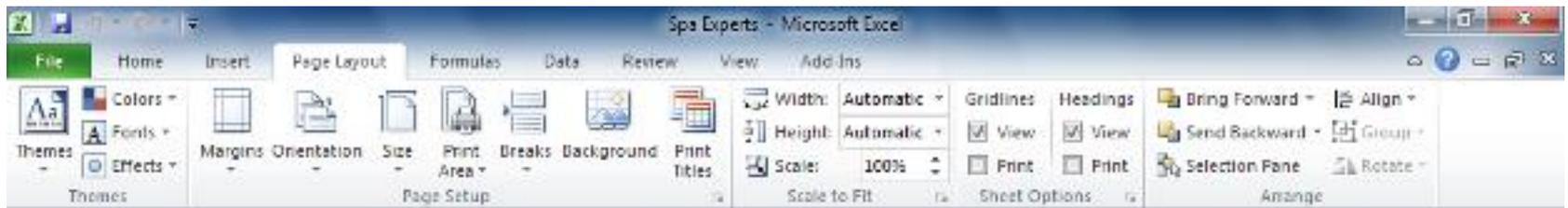


# Sorting and Filtering Using Conditional Formatting

- It is possible to apply sorting and filtering commands to data using a conditional filter
  - Use the **Sort by Color** option to group highlighted records
  - Sort the field in ascending order to arrange data bars
  - Use the **Filter by Color** option to display only highlighted records

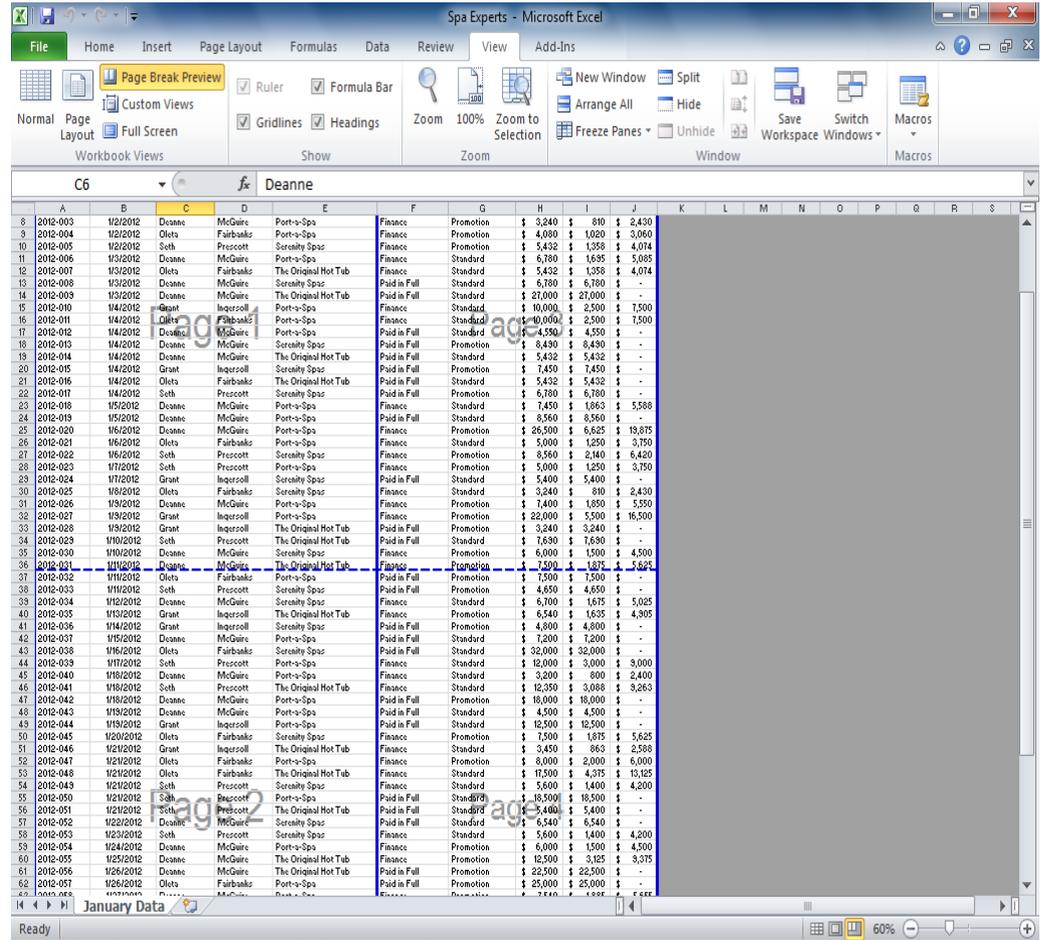
# Printing Large Datasets

- The **Page Layout** tab offers options to help print large datasets:
  - Page Breaks (Page Layout tab / Page Setup group / Breaks)
  - Print Area (Page Layout tab / Page Setup group / Print Area)
  - Page Titles (Page Layout tab / Page Setup group / Print Titles)



# Manual Page Breaks

- A **page break** indicates where data will start on a new printed page
- To set a **manual page break**, click the new first-cell-on-page; click **Page Layout** tab / **Breaks** / **Insert Page Break**.



# Setting a Print Area

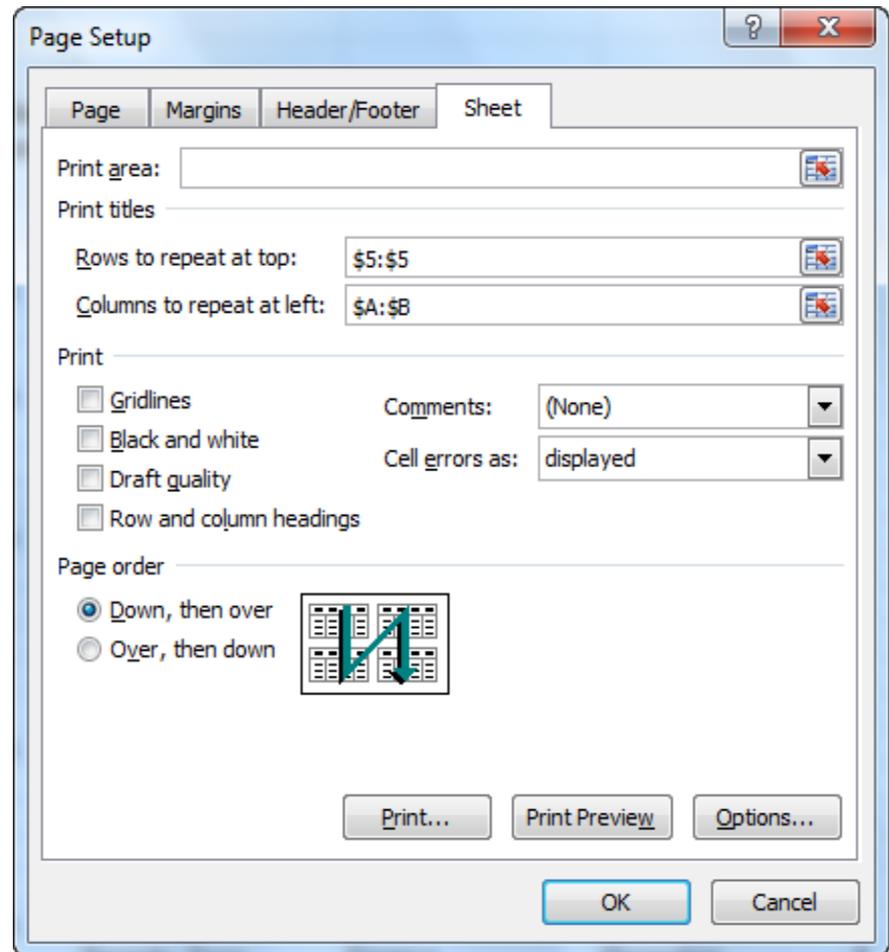
- A **page area** defines the range of data to print.
- Select area you want to print; Page Layout tab / Page Setup group / Print Area / Set Print Area.

The screenshot shows the Microsoft Excel interface with the 'Page Layout' tab selected. The 'Print Area' group in the ribbon is active, and the 'Set Print Area' context menu is open over a table of data. The table is titled 'The Spa Experts Monthly Transactions' and contains columns for Date, Sales Rep, Manufacturer, Payment Type, Transaction, Amount, Down Payment, and Owed. The current selection is on row 25, column K.

Date	Sales Rep First Name	Sales Rep Last Name	Manufacturer	Payment Type	Transaction	Amount	Down Payment	Owed
1/1/2012	Deanne	McGuire	The Original Hot Tub	Finance	Promotion	\$ 15,000	\$ 3,750	\$ 11,250
1/1/2012	Grant	Ingersoll	The Original Hot Tub	Finance	Promotion	\$ 12,000	\$ 3,000	\$ 9,000
1/2/2012	Deanne	McGuire	Port-a-Spa	Finance	Promotion	\$ 3,240	\$ 810	\$ 2,430
1/2/2012	Oleta	Fairbanks	Port-a-Spa	Finance	Promotion	\$ 4,080	\$ 1,020	\$ 3,060
1/2/2012	Seth	Prescott	Serenity Spas	Finance	Promotion	\$ 5,432	\$ 1,358	\$ 4,074
1/3/2012	Deanne	McGuire	Port-a-Spa	Finance	Standard	\$ 6,780	\$ 1,695	\$ 5,085
1/3/2012	Oleta	Fairbanks	The Original Hot Tub	Finance	Standard	\$ 5,432	\$ 1,358	\$ 4,074
1/3/2012	Deanne	McGuire	Serenity Spas	Paid in Full	Standard	\$ 6,780	\$ 6,780	\$ -
1/3/2012	Deanne	McGuire	The Original Hot Tub	Paid in Full	Standard	\$ 27,000	\$ 27,000	\$ -
1/4/2012	Grant	Ingersoll	Port-a-Spa	Finance	Standard	\$ 10,000	\$ 2,500	\$ 7,500
1/4/2012	Oleta	Fairbanks	Port-a-Spa	Finance	Standard	\$ 10,000	\$ 2,500	\$ 7,500
1/4/2012	Deanne	McGuire	Port-a-Spa	Paid in Full	Standard	\$ 4,550	\$ 4,550	\$ -
1/4/2012	Deanne	McGuire	Serenity Spas	Paid in Full	Promotion	\$ 8,490	\$ 8,490	\$ -
1/4/2012	Deanne	McGuire	The Original Hot Tub	Paid in Full	Standard	\$ 5,432	\$ 5,432	\$ -
1/4/2012	Grant	Ingersoll	Serenity Spas	Paid in Full	Promotion	\$ 7,450	\$ 7,450	\$ -
1/4/2012	Oleta	Fairbanks	The Original Hot Tub	Paid in Full	Standard	\$ 5,432	\$ 5,432	\$ -
1/4/2012	Seth	Prescott	Serenity Spas	Paid in Full	Promotion	\$ 6,780	\$ 6,780	\$ -
1/5/2012	Deanne	McGuire	Port-a-Spa	Finance	Standard	\$ 7,450	\$ 1,863	\$ 5,588
1/5/2012	Deanne	McGuire	Port-a-Spa	Paid in Full	Standard	\$ 8,560	\$ 8,560	\$ -
1/6/2012	Deanne	McGuire	Port-a-Spa	Finance	Promotion	\$ 26,500	\$ 6,625	\$ 19,875
1/6/2012	Oleta	Fairbanks	Port-a-Spa	Finance	Standard	\$ 5,000	\$ 1,250	\$ 3,750
1/6/2012	Seth	Prescott	Serenity Spas	Finance	Promotion	\$ 8,560	\$ 2,140	\$ 6,420
1/7/2012	Seth	Prescott	Port-a-Spa	Finance	Promotion	\$ 5,000	\$ 1,250	\$ 3,750
1/7/2012	Grant	Ingersoll	Serenity Spas	Paid in Full	Standard	\$ 5,400	\$ 5,400	\$ -

# Print Titles

- **Print titles** indicate some rows or columns that will repeat at the top or side of each printed page.
- Page Layout tab / Page Setup dialogue box launcher (arrow) / Sheet tab / Page order section.
- *Demonstration...*



# Summary

- In this chapter, you have learned to manage large datasets by freezing rows and columns and controlling print options.
- You understand table design and can create and format a table.
- You can sort and filter data in a table.
- You can use structured references in formulas and apply statistical functions in a total row.
- You can apply conditional formatting to add emphasis to records.

# COMP1000 Spreadsheets, Databases, Web

## Data Analysis using Excel (Not included in exams!)

- Data Analysis
- Histogram
- Descriptive Statistics
- Correlation
- Fitting Equations to Data

# Data Analysis

- Data analysis techniques allow professionals like engineers, social scientists and economists to extract meaningful information from a (typically) vast amount of data.
- Excel is widely available, and provides useful functions/features for data analysis.
- Some of these functions/features include:
  - Histogram
  - Descriptive Statistics
  - Correlation
  - Regression Analysis

# Analysis Toolpak in Excel

- Analysis Toolpak is an add-in package for Excel. You need to activate it using **Excel Options/Add-Ins** (via the **File** menu in Excel 2010, or the Office button in 2007).
- Make sure that both the **Analysis ToolPak** and **Solver** Add-in are in the “Active Application” list, otherwise click Manage Add-ins.
- For more info see “**Enable or disable add-ins**” in “**Excel Help**”.
- The Analysis Toolpak provides tools to help users to quickly and easily carry out reasonably complex data analysis tasks.
- It provides support for many popular statistical and engineering data analysis tasks.
- *Note:* Excel's statistics algorithms are not sufficiently robust for use by professional statisticians (but they're OK for normal purposes)

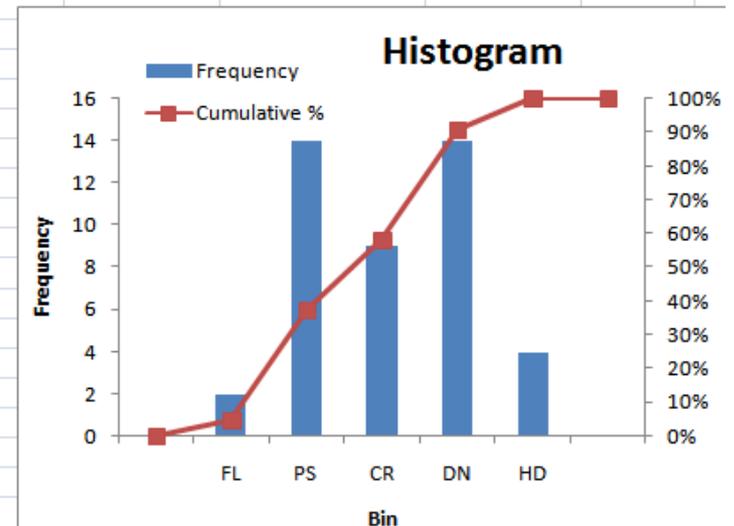
# Histogram

- A **histogram** is a graphical representation of a **frequency distribution**.
- A process of creating a histogram requires a user to provide **“bin” values**. Data values are aggregated/separated into classes based on these bin values. In a histogram, each bar represents one bin, and the height of the bar represents the frequency of that bin.

On Mark	Exam	Total	Final	Rank	Statistics (simple)	
82	38	60.0	60	31		
85	83	84.0	84	5	<b>Average</b>	68.45
63	89	76.0	76	17	<b>Max</b>	89.5
89	11	50.0	50	40	<b>Min</b>	40
67	89	78.0	78	13	<b>Count</b>	43
59	27	40.0	40	43		
66	36	51.0	51	38		
74	36	55.0	55	36		
53	78	65.5	66	26		
85	31	58.0	58	33		
76	75	75.5	76	18		
98	34	66.0	66	24	FL	49
92	51	71.5	72	21	PS	64
60	61	60.5	61	30	CR	74
57	60	58.5	59	32	DN	84
76	79	77.5	78	15	HD	100
81	32	56.5	57	34		
71	71	71.0	71	22		
86	46	66.0	66	24		
82	54	68.0	68	23		
63	61	62.0	62	28		
92	63	77.5	78	15		
77	98	87.5	88	3		
49	42	45.5	46	42		
72	85	78.5	79	11		
79	82	80.5	81	7		
60	41	50.5	51	39		

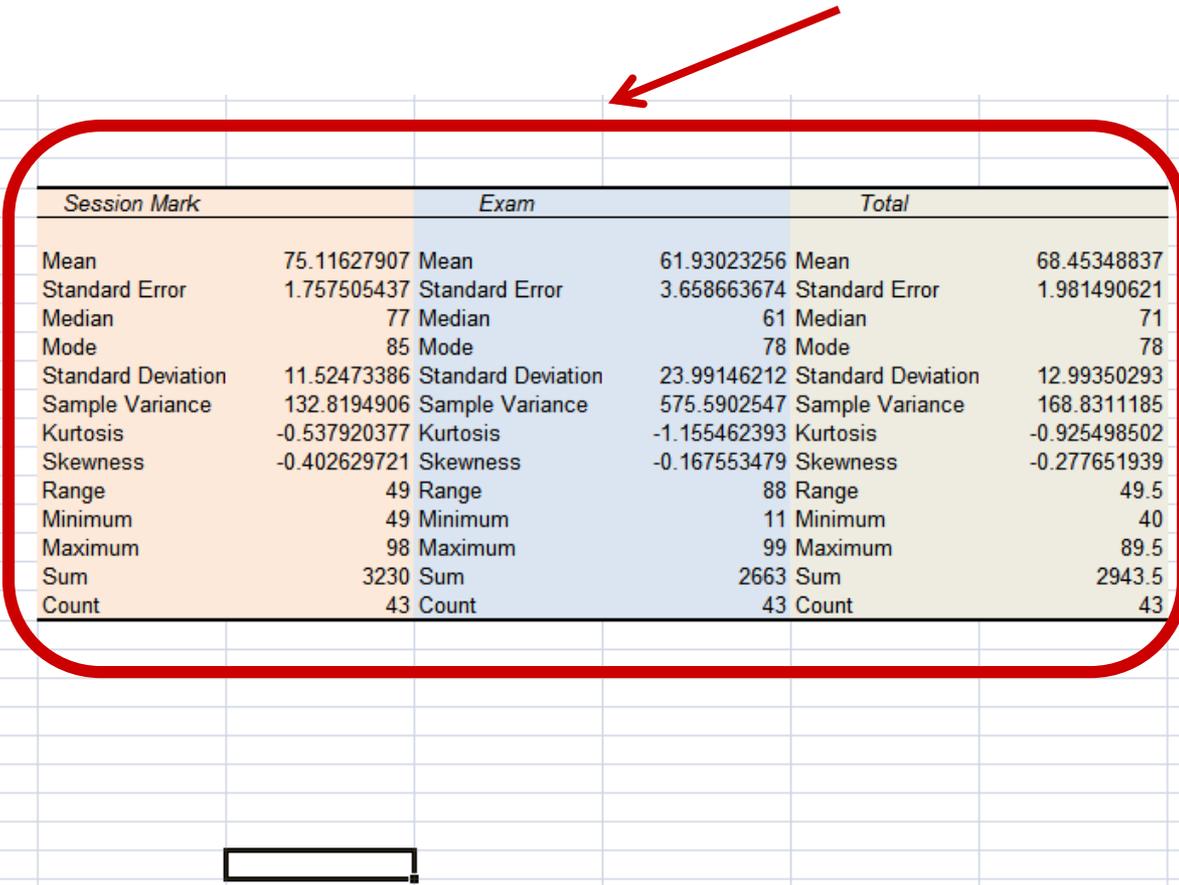
  

Bin	Frequency	Cumulative %
0	0	0.00%
49	2	4.65%
64	14	37.21%
74	9	58.14%
84	14	90.70%
100	4	100.00%
More	0	100.00%



# Descriptive Statistics

Assignments	Session Mark	Exam	Total	Final	Rank
12	82	38	60.0	60	31
25	85	83	84.0	84	5
19	63	89	76.0	76	17
11	89	11	50.0	50	40
6	67	89	78.0	78	13
12	59	27	40.0	40	43
10	66	36	51.0	51	38
13	74	36	55.0	55	36
12	53	78	65.5	66	26
10	85	31	58.0	58	33
12	76	75	75.5	76	18
19	98	34	66.0	66	24
17	92	51	71.5	72	21
17	60	61	60.5	61	30
10	57	60	58.5	59	32
6	76	79	77.5	78	15
15	81	32	56.5	57	34
12	71	71	71.0	71	22
17	86	46	66.0	66	24
7	82	54	68.0	68	23
17	63	61	62.0	62	28
17	92	63	77.5	78	15
14	77	98	87.5	88	3
5	49	42	45.5	46	42
9	72	85	78.5	79	11
17	79	82	80.5	81	7
17	60	41	50.5	51	39
8	86	38	62.0	62	28
9	83	81	82.0	82	6
15	81	31	56.0	56	35
10	83	73	78.0	78	13



Session Mark		Exam		Total	
Mean	75.11627907	Mean	61.93023256	Mean	68.45348837
Standard Error	1.757505437	Standard Error	3.658663674	Standard Error	1.981490621
Median	77	Median	61	Median	71
Mode	85	Mode	78	Mode	78
Standard Deviation	11.52473386	Standard Deviation	23.99146212	Standard Deviation	12.99350293
Sample Variance	132.8194906	Sample Variance	575.5902547	Sample Variance	168.8311185
Kurtosis	-0.537920377	Kurtosis	-1.155462393	Kurtosis	-0.925498502
Skewness	-0.402629721	Skewness	-0.167553479	Skewness	-0.277651939
Range	49	Range	88	Range	49.5
Minimum	49	Minimum	11	Minimum	40
Maximum	98	Maximum	99	Maximum	89.5
Sum	3230	Sum	2663	Sum	2943.5
Count	43	Count	43	Count	43

# Correlation

- **Correlation** is a statistical measure referring to the strength of linear relationship between two or more variables
- It can vary from **-1** (perfect **negative** correlation) through **0** (**no** correlation) to **+1** (perfect **positive** correlation)
- Excel provides a tool called “**Correlation**” that can calculate correlations between two or more variables.
- Alternatively, a user can plot a chart for two or more variables and try to visually identify possible correlations between variables.

# Fitting Equations to Data

- The method of least squares tries to fit a curve (including a straight line) through an *aggregate* of data. It tries to find a simple relationship among variables and express the relationship as an equation.
- The “best-fit” curve is the one that minimises the sum of the squares of the residuals (differences between data and the predicted value).
- Two approaches in Excel:
  - Using “**Trendlines**” on charts (preferred for casual use)
  - Using the “**Regression**” tool (gives more stats)
- If we do not need a lot of information about the regression, we can use **Trendlines** on charts. They provide the **basic equation** and **R<sup>2</sup> value**, and show the regression line superimposed on the data values.
- The **R<sup>2</sup> value** (varies from 0 to 1) indicates how well the model fits the data. **R<sup>2</sup> = 1** indicates that the regression line (curve) is a **perfect fit** to the data.
- See **Topic 4** in the textbook.

# Fitting Equations to Data

