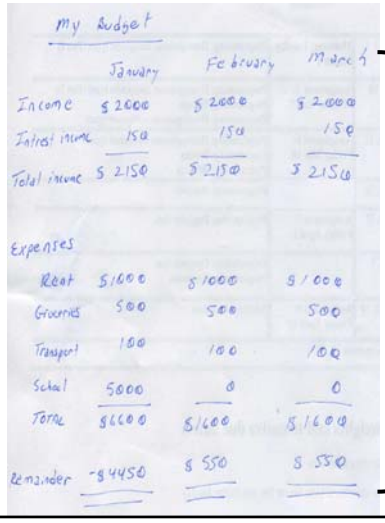
Spreadsheets

You will learn about some important spreadsheet features as well as good design principles.

Paper Spreadsheets

- The original purpose was to show the data to be used in calculations.

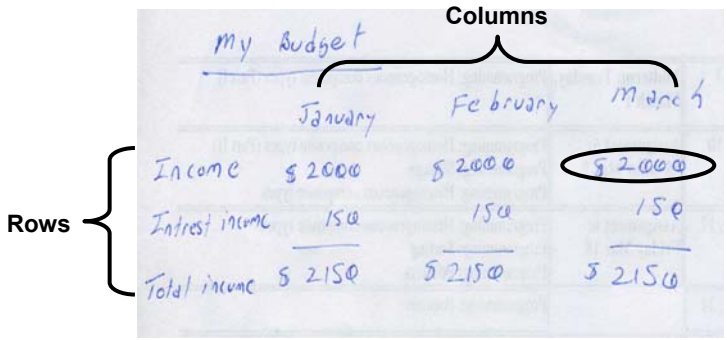


my budget

	January	February	March
Income	$2000	$2000	$2000
Interest income	150	150	150
Total income	$2150	$2150	$2150
Expenses			
Rent	$1000	$1000	$1000
Groceries	500	500	500
Transport	100	100	100
School	5000	0	0
Total	$6600	$1600	$1600
Remainder	-$4450	$550	$550

This information was represented in tabular form. These tables became known as spreadsheets

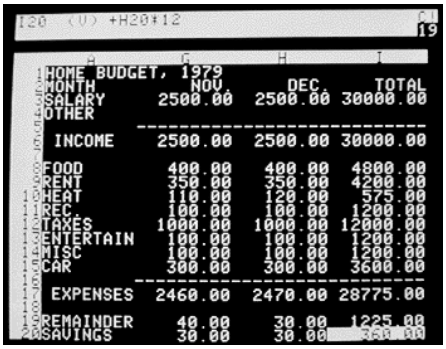
Spreadsheet Terminology



Drawbacks Of Paper Spreadsheets

- However making changes could be awkward:
  - Modifying the data e.g., correcting errors
  - Attempting variations e.g., for a personal budget what would be the effect of living in a 1 bedroom vs. 2 bedroom apartment, taking a full time vs. part time job, going on a vacation to Paris France vs. going to Vulcan Alberta.

Electronic Spreadsheets



	G	H	I
1	HOME BUDGET, 1979		
2	MONTH	NOV.	DEC.	TOTAL
3	SALARY	2500.00	2500.00	30000.00
4	OTHER			
5	INCOME	2500.00	2500.00	30000.00
6	FOOD	400.00	400.00	4800.00
7	RENT	350.00	350.00	4200.00
8	HEAT	110.00	120.00	575.00
9	REC	100.00	100.00	1200.00
10	TAXES	1000.00	1000.00	12000.00
11	ENTERTAIN	100.00	100.00	1200.00
12	MISC	100.00	100.00	1200.00
13	CAR	300.00	300.00	3600.00
14	EXPENSES	2460.00	2470.00	28775.00
15	REMAINDER	40.00	30.00	1225.00
16	SAVINGS	30.00	30.00	1260.00

VISICALC Dan Bricklin & Bob Frankston

- Early versions of electronic spreadsheets were primitive but they did what paper spreadsheets did and more.

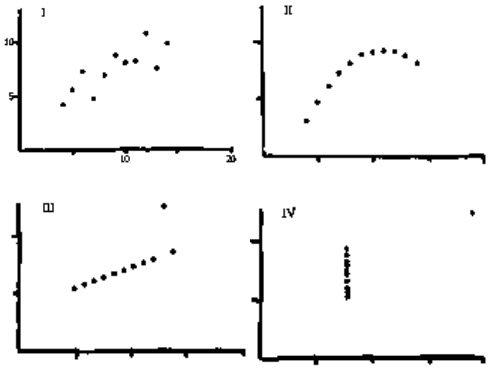
Electronic Spreadsheets (2)

- Are used to perform calculations.
- They may also be used to quickly try out different scenarios (this is called "what if analysis"):
  - E.g., : If I received a B+ on all the assignments what would my term grade be if I got an "A" on the final exam? What if I got a "D" on the final?
- Also spreadsheets are frequently used to help people visualize and interpret information.

Example Visualization : Anscombe's Quartet

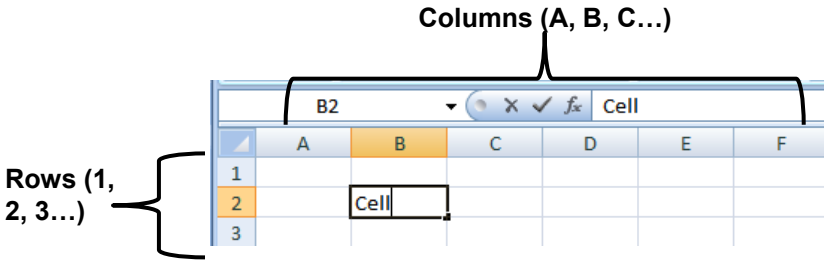
- A famous example showing the benefits of having an effective visualization.
- Shown one way (a set of numbered pairs) it's hard to analyze the information e.g., is there any trends or patterns?

I		II		III		IV	
x	y	x	y	x	y	x	y
10.0	8.04	10.0	9.14	10.0	7.46	8.0	6.58
8.0	6.95	8.0	8.14	8.0	6.77	8.0	5.76
13.0	7.58	13.0	8.74	13.0	12.74	8.0	7.71
9.0	8.81	9.0	8.77	9.0	7.11	8.0	8.84
11.0	8.33	11.0	9.26	11.0	7.81	8.0	8.47
14.0	9.96	14.0	8.10	14.0	8.84	8.0	7.04
6.0	7.24	6.0	6.13	6.0	6.08	8.0	5.25
4.0	4.26	4.0	3.10	4.0	5.39	19.0	12.50
12.0	10.84	12.0	9.13	12.0	8.15	8.0	5.56
7.0	4.82	7.0	7.26	7.0	6.42	8.0	7.91
5.0	5.68	5.0	4.74	5.0	5.73	8.0	6.89



James Tam

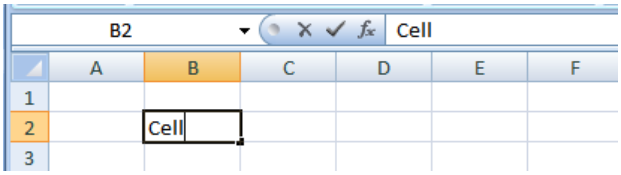
Electronic Spreadsheets Are Also Grid-Based



James Tam

Spreadsheet Cells

•It's the intersection of a row and column.

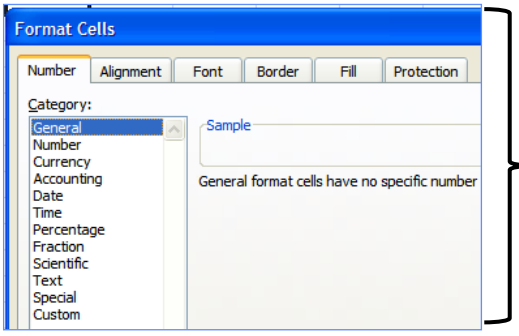


•Cells can contain:

- Text (alphabetic, numeric or most anything that can be entered using a keyboard).
- Numerical information.
- Calculations in formulas.

Number Formatting

•Are useful formatting effects that are unique only to numeric information.



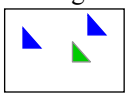
Example: currency format automatically displays a currency symbol and rounds to two decimal places.

A Brief Discussion Of Graphic Design And Spreadsheets

- How to use and not to use color
- Contrast and consistency
- Rules of thumb for formatting text

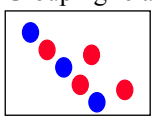
Using Color To Help Visualize Information

- Color is one of the most widely used (and misused) ways of communicating information.
- Color works well for:
  - Making things stand out



This is **important**!

  - Grouping related items

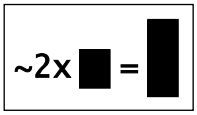


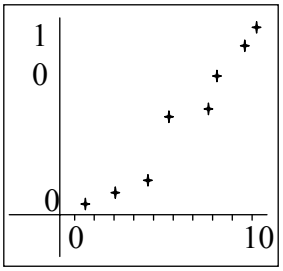
Using Color To Help Visualize Information (2)

•Color should not be used for:

- Communicating numerical information

- (In these cases): Consider using something else like size or position.



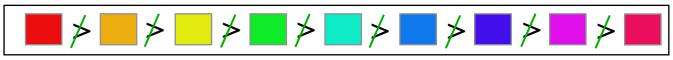


James Tam

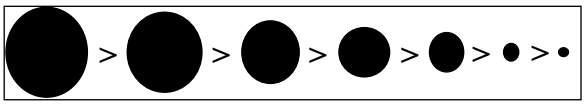
Using Color To Help Visualize Information (3)

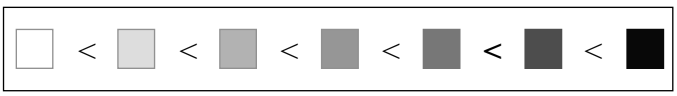
•Color should not be used for:

- Showing a ranking between items



- (In these cases): Consider using something else like size, position or brightness/value.



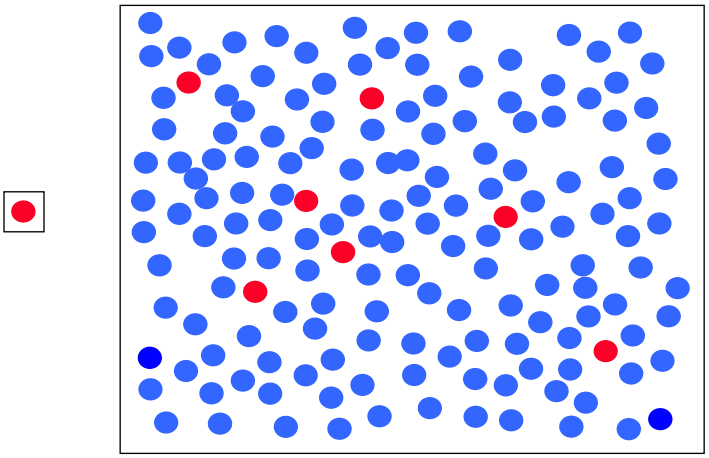


James Tam

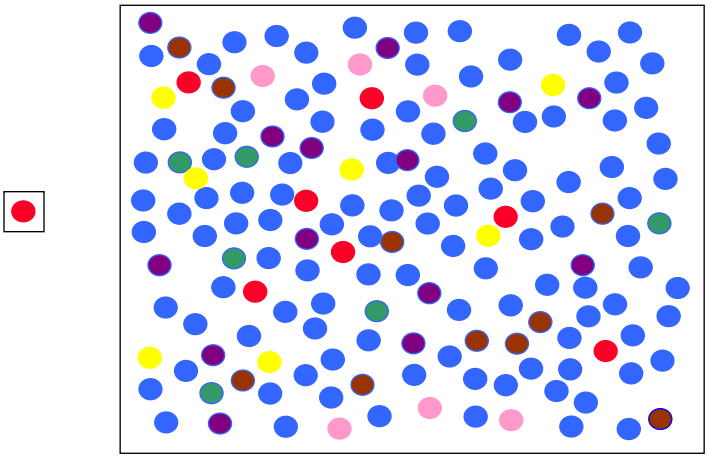
Use Color Sparingly

•Don't use color like you did when you were a kid.

Color Is Used Sparingly: Effective

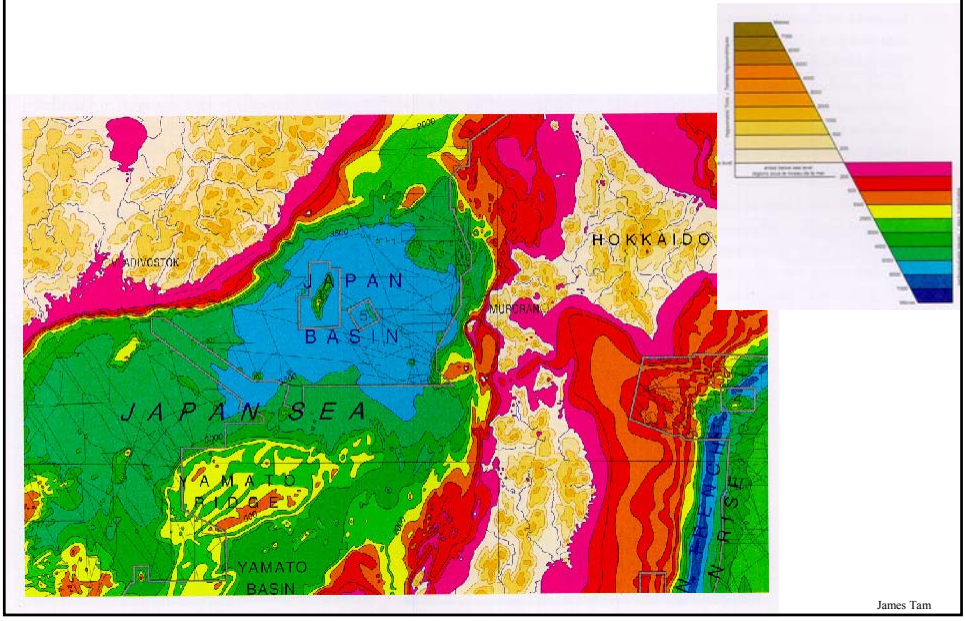


The Increased Use Of Color: Mutes The Message



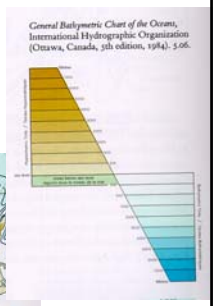
James Tam

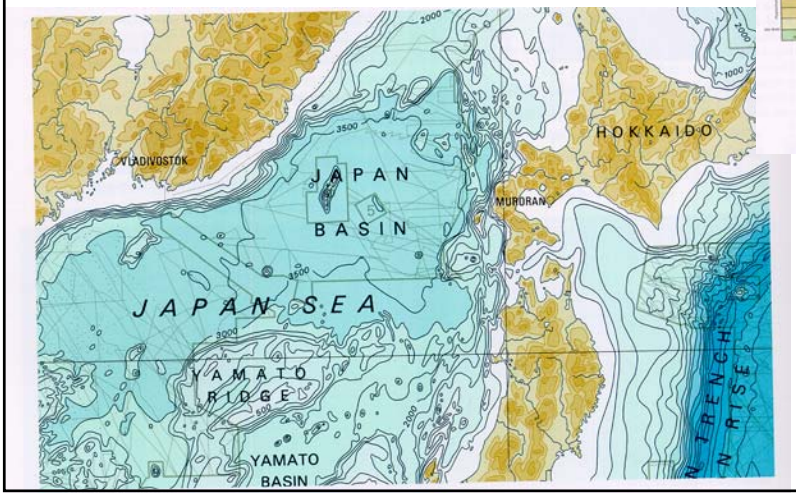
Over Use Of Color: Mutes The Message



James Tam

Color Is Used Sparingly: Effective

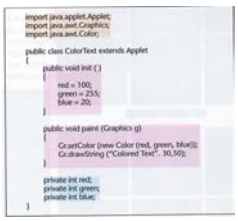




James Tam

Additional Issues Associated With Color

- Color blindness:
  - The majority of people who are color blind are red-green color blind so using only these colors to represent information should be avoided.
- Field size
  - The larger the area to be color coded, the more easily that colors can be distinguished.



```
import java.applet.Applet;
import java.awt.Graphics;
import java.awt.Color;

public class ColorText extends Applet
{
    public void init ( )
    {
        red = 100;
        green = 255;
        blue = 20;
    }

    public void paint (Graphics g)
    {
        G.setColor (new Color (red, green, blue));
        G.drawString ("Colored Text", 30,50);
    }

    private int red;
    private int green;
    private int blue;
}
```

  - This means that if you use color for a large surface area you can use more muted/subtle colors. If you are using color for a small surface area then you need richer colors in order to make them stand out more.

James Tam

Additional Issues Associated With Color (2)

- When objects are small (text or small graphics) and color is used to distinguish information use highly saturated colors.

This is
important
information!

This is
important
information!

•Conventions

- "Commonly accepted" conventions can vary widely by culture and their use should be carefully considered e.g., white is associated with purity in some Western cultures and death in some Eastern cultures.

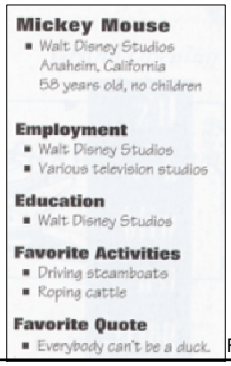
Color And Cultural Associations

	Egypt	China	Japan	India	France
Red	• **Death**	•**Happiness**	• **Anger, Danger**	• **Life, creativity**	• **Aristocracy, Freedom, Peace**
Blue	• **Virtue, Faith, Truth**	• **Heavens, Clouds**	•**Villainy**		• **Freedom, peace**
Green	• **Fertility, Strength**	• **Ming Dynasty, Heavens, Clouds**	• **Future, Youth, Energy**	• **Prosperity, Fertility**	•**Criminality**
Yellow	• **Happiness, Prosperity**	• **Birth, Wealth, Power**	• **Grace, Nobility**	•**Success**	•**Temporary**
White	•**Joy**	•**Death, Purity**	•**Death**	• **Death, Purity**	•**Neutrality**

From "How Fluent is Your Interface? Designing for International Users" Proceedings of the INTERCHI'93. Russo P. and Boor S.

Contrast, Consistency

- Information that belongs in the same category should visually appear similar:
  - Font type
  - Font size and effects (bold, italics, underline)
- Information in different categories should not only look different but the difference should be significant.



Mickey Mouse
- Walt Disney Studios
  Anaheim, California
  58 years old, no children

Employment
- Walt Disney Studios
- Various television studios

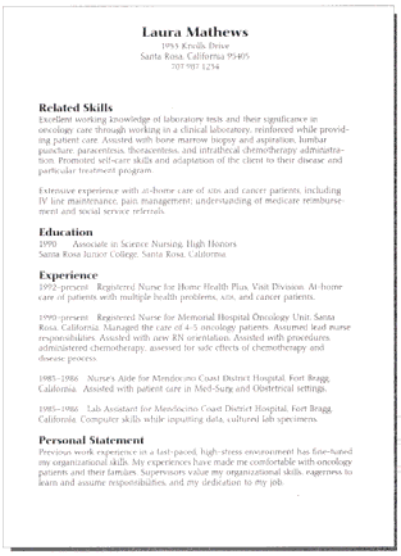
Education
- Walt Disney Studios

Favorite Activities
- Driving steamboats
- Roping cattle

Favorite Quote
- Everybody can't be a duck.

From "The Non-Designers Design book by Robin Williams

Contrasting Contrast



Laura Mathews
1953 Knolls Drive
Santa Rosa, California 95405
707 987 1254

Related Skills
Excellent working knowledge of laboratory tests and their significance in oncology care through working in a clinical laboratory, reinforced while providing patient care. Assisted with bone marrow biopsy and aspiration, lumbar puncture, paracentesis, thoracentesis, and intrathecal chemotherapy administration. Promoted self-care skills and adaptation of the client to their disease and particular treatment program.

Extensive experience with at-home care of sons and cancer patients, including IV line maintenance, pain management; understanding of medicare reimbursement and social service referrals.

Education
1990 Associate in Science Nursing, High Honors
Santa Rosa Junior College, Santa Rosa, California

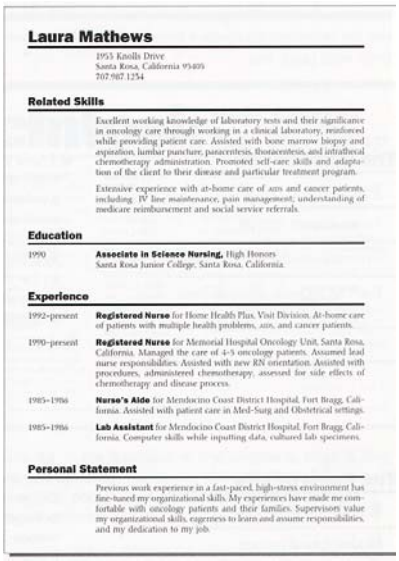
Experience
1992–present Registered Nurse for Home Health Plus, Visit Division. At-home care of patients with multiple health problems, sons, and cancer patients.

1990–present Registered Nurse for Memorial Hospital Oncology Unit, Santa Rosa, California. Managed the care of 4–5 oncology patients. Assumed lead nurse responsibilities. Assisted with new RN orientation. Assisted with procedures, administered chemotherapy, assessed for side effects of chemotherapy and disease process.

1985–1986 Nurse's Aide for Mendocino Coast District Hospital, Fort Bragg, California. Assisted with patient care in Med-Surg and Obstetrical settings.

1985–1986 Lab Assistant for Mendocino Coast District Hospital, Fort Bragg, California. Computer skills while inputting data, cultured lab specimens.

Personal Statement
Previous work experience in a fast-paced, high-stress environment has fine-tuned my organizational skills. My experiences have made me comfortable with oncology patients and their families. Supervisors value my organizational skills, eagerness to learn and assume responsibilities, and my dedication to my job.



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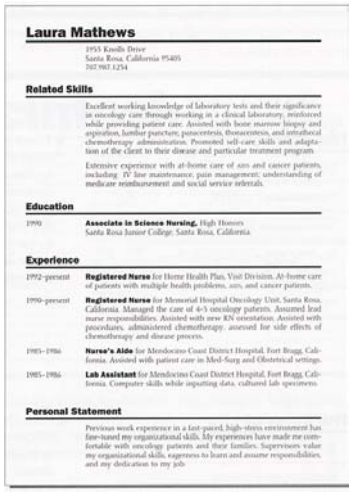
From "The Non-Designers Design book by Robin Williams

Consistency And Contrast In A Spreadsheet

	Assign1	Assign2	Assign3	Midterm	Final	Term grade
111	A	A	A-	B		
112	B	C	C	D		
113	C-	B+	D	C		
114	A	A	A-	B		
115	C-	B+	B	C		
116	C	C	C+	D+		
117	A	A	A-	B		
118	A-	B+	B+	B		
119	C	B+	B-	C+		
120	A	A	B+	B		

Formatting Text

- If used sparingly fonts and font effects can be an effective way of highlighting and drawing attention to important information.



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From "The Non-Designers Design book by Robin Williams

Formatting Text (2)

- Just because you *can* use a lot of different formatting effects doesn't mean that you *should* do it.
- Rule of thumb:
  - Maximum 3 variations of the following: font types, font style and color.
  - Maximum 3 different sizes of fonts.
- Don't overdo it!
  - Format painter (highlighter)
  - Cut, copy and paste text
  - **Clipboard**
  - **DRAGGING and *dropping (text)***
  - **Finding and replacing words in a document**
  - Headers ***and*** *footers*
  - Working with images (clipart, other images stored on your computer)
- If you're not sure if a font is a good one to use then it probably isn't
  - (This is a real font called "Wing dings"): ♦♓■♑ ♎♓■♑♦

James Tam

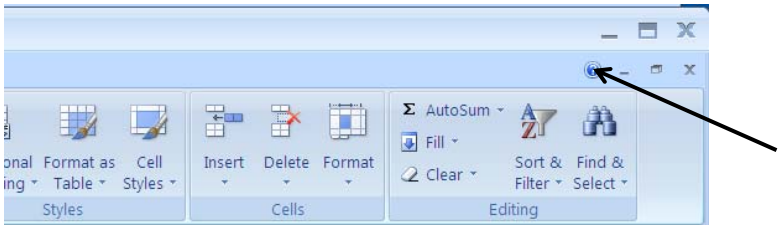
The Clipboard

- As text or pictures have been cut or copied, they can be temporarily stored in the area known as 'The Clipboard'
- It is a storage space that is shared among all MS-Office programs (something that is stored in the clipboard when using one MS-Office program: Access, Excel, Outlook, PowerPoint, Publisher, SharePoint, Word, will be stored in the same common clipboard as another program in office).
- This allows you reuse these items when they are stored in the Clipboard rather than having to cut or copy it again.
- Important things to remember:
  - Things that are stored in the clipboard are only temporarily stored there.
  - The clipboard can only store a maximum of 24 items.

James Tam

Do You Need Help?

•It's built into every MS-Office product (for Office 2003 users) it's been moved out of the menu bar into it's own icon.



Some Benefits Of Electronic Spreadsheets

•Calculations can be automated

- Many formulas are built into Excel e.g., sum a range of numbers along a column **sum(r1:r10).**
- In addition to this almost any arbitrary formula can be specified by an Excel user.
  - E.g., term GPA = (assignment GPA) * (percentage worth for assignment)
  - + (midterm GPA) * (percentage worth for exam)
  - + (final exam GPA) * (percentage worth for exam)
- Changes can be quickly made.

	A	B	C
1	Net income	$2,000.00	
2			
3		**Feb expenses**	**March expenses**
4	Rent	$907.00	$907.00
5	Parking	$25.00	$25.00
6	Groceries	$300.00	$300.00
7	Car	$500.00	$500.00
8	Fun	$0.00	$100.00
9	Misc	$100.00	$200.00
10	Total expenses	$1,832.00	$2,032.00
11			
12	Income after bills	$168.00	-$32.00

Row 10 sums all the expenses

The difference between B1 and Row 10

Some Benefits Of Electronic Spreadsheets (2)

- Changes can be quickly made.

	A	B	C
1	Net income	$2,200.00	
2			
3		**Feb expenses**	**March expenses**
4	Rent	$907.00	$907.00
5	Parking	$25.00	$25.00
6	Groceries	$300.00	$300.00
7	Car	$500.00	$500.00
8	Fun	$0.00	$100.00
9	Misc	$100.00	$200.00
10	Total expenses	$1,832.00	$2,032.00
11			
12	Income after bills	$368.00	$168.00

A change is made here.

Automatically reflected here (where the data is referenced).

Methods Of Referring To Cells

- Absolute
- Relative

Absolute Reference

- When a reference to an cell or range of cells doesn't change when the contents of a cell or cells is copied or the sheet changes in size.

	A	B	C
1	Net income	$2,000.00	
2			
3		**Feb expenses**	**March expenses**
4	Rent	$907.00	$907.00
5	Parking	$25.00	$25.00
6	Groceries	$300.00	$300.00
7	Car	$500.00	$500.00
8	Fun	$0.00	$100.00
9	Misc	$100.00	$200.00
10	Total expenses	$1,832.00	$2,032.00
11			
12	Income after bills	$168.00	-$32.00

Original formula (B12)

=$B$1-B10

Copied (C12)

=$B$1-C10

Absolute Reference (2)

Original formula (B12)

=$B$1-B10

Absolute reference

Copied (C12)

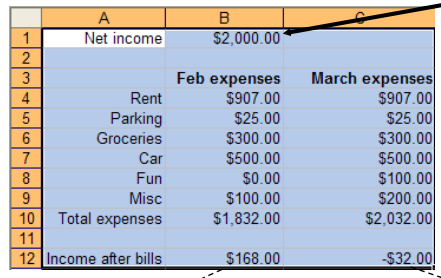
=$B$1-C10

Absolute reference

Absolute reference because the same (absolute) reference to cell B1 is made when the formula is copied.

Absolute Reference (3)

- Typically it's used in conjunction with constants (data that won't change).



	A	B	C
1	Net income	$2,000.00	
2			
3		**Feb expenses**	**March expenses**
4	Rent	$907.00	$907.00
5	Parking	$25.00	$25.00
6	Groceries	$300.00	$300.00
7	Car	$500.00	$500.00
8	Fun	$0.00	$100.00
9	Misc	$100.00	$200.00
10	Total expenses	$1,832.00	$2,032.00
11			
12	Income after bills	$168.00	-$32.00

References to B1 are absolute because income doesn't change

Original formula (B12)

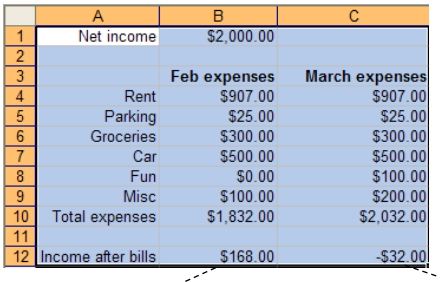
=$B$1-B10

Copied (C12)

=$B$1-C10

Relative Reference

- A reference to a cell or group of cells that may change if the cell/cells are copied or the sheet changes in size.



	A	B	C
1	Net income	$2,000.00	
2			
3		**Feb expenses**	**March expenses**
4	Rent	$907.00	$907.00
5	Parking	$25.00	$25.00
6	Groceries	$300.00	$300.00
7	Car	$500.00	$500.00
8	Fun	$0.00	$100.00
9	Misc	$100.00	$200.00
10	Total expenses	$1,832.00	$2,032.00
11			
12	Income after bills	$168.00	-$32.00

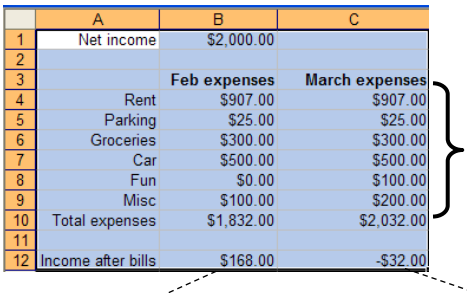
Original formula (B12)

=$B$1-B10

Copied (C12)

=$B$1-C10

Relative Reference (2)



	A	B	C
1	Net income	$2,000.00	
2			
3		**Feb expenses**	**March expenses**
4	Rent	$907.00	$907.00
5	Parking	$25.00	$25.00
6	Groceries	$300.00	$300.00
7	Car	$500.00	$500.00
8	Fun	$0.00	$100.00
9	Misc	$100.00	$200.00
10	Total expenses	$1,832.00	$2,032.00
11			
12	Income after bills	$168.00	-$32.00

Recall:

- Total expenses (row 10) is a calculated value. It sums rows 4 – 9.

Original formula (B12)

=$B$1-B10

Relative reference

Copied (C12)

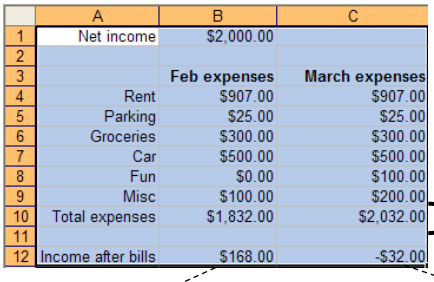
=$B$1-C10

Relative reference

Relative reference because the copied formula will change relative to how far it's copied.

Relative Reference (3)

- Typically it's used with variable data (that may change over time or in different parts of the sheet).



	A	B	C
1	Net income	$2,000.00	
2			
3		**Feb expenses**	**March expenses**
4	Rent	$907.00	$907.00
5	Parking	$25.00	$25.00
6	Groceries	$300.00	$300.00
7	Car	$500.00	$500.00
8	Fun	$0.00	$100.00
9	Misc	$100.00	$200.00
10	Total expenses	$1,832.00	$2,032.00
11			
12	Income after bills	$168.00	-$32.00

Total expenses may change from month-to-month so references will likely be relative.

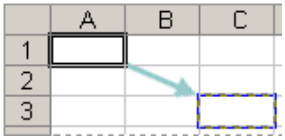
Original formula (B12)

=$B$1-B10

Copied (C12)

=$B$1-C10

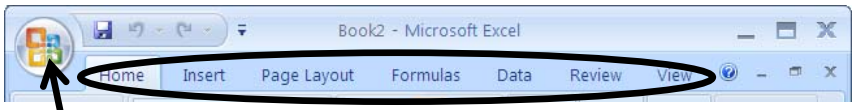
Absolute, Relative And Mixed References: Examples[1]



Example	Reference type	Copied result
$A$1	•Absolute column •Absolute row	$A$1
A$1	•Relative column •Absolute row	C$1
$A1	•Absolute column •Relative row	$A3
A1	•Relative column •Relative row	C3

1 Examples from the Excel 2003 Help System

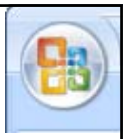
Organization Of Excel Functions



The 'ribbon'

Office button

The Office Button (Excel)

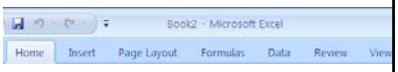


- File related operations (new, open, save, print): operations that were available through the 'file' menu of older versions of MS-Office
- Change properties via 'Excel options' (set access permissions, protect data by encrypting the sheet): many options that were available under the 'tools' menu.
- Email the sheet or publish it to the web (features new to Excel 2007).
- Configuration options for Excel: fonts and layout, menus and toolbars, error checking formulas.

The Ribbon: Excel

- **Home tab:**
  - Creating, formatting and editing a spreadsheet. The commands are arranged into the Clipboard, Font, Alignment, Number, Styles, Cells, and Editing groups.
- **Insert tab:**
  - Allows things to be added to the sheet: pictures, tables, shapes, charts and graphs, symbols.
- **Page layout tab:**
  - Includes printing options and document themes. The page layout tab is arranged into Themes, Page setup, Scale to fit, Sheet Options and Arrange groups.

The Ribbon: Excel



- **Data tab:**
  - Used to import data, organizing data by sorting and filtering, running different 'what if' scenarios, grouping data. Commands in the data tab are grouped into: Get external data, Connections, Sort and filter, Data tools, Outline groups.
- **Review tab:**
  - Used when proofing, protecting and preparing a spreadsheet for review by others. It includes groups for Proofing, Comments and Changes.
- **View tab:**
  - Used to change the current view of the worksheet. Groups include: Workbook views, Show/hide, Zoom, Window and Macros.
- **Formulas tab:**
  - Used when adding predefined functions, creating new formulas or when checking a calculation for errors. It includes four groups: Function library, Defined names, Formula Auditing and Calculation.

Worksheets

- Each *spreadsheet/workbook* can consist of multiple *worksheets.*

SC 203: Fall 2008 (Lecture 02),Term GPA's for each component

ID	THA1	THA2	THA3	Weighted assignments	TBA1	TBA2	TBA3	TBA4	Weighted TBA	Midte
10002072	3.7	3.3	4	0.92	4	3.7	3	3.7	0.90	2.3
10002120		3	3.7	0.573	0	2	0	2.7	0.29	1.3
10002453				0	0	3			0.19	1.3
10002940	3.7	4	4	0.976	4	4	4	4	1.00	3
10003346	4	4	4	1	2	4	3.7	4	0.86	2.7
10004633				0					0.00	
10004663			3	0.27		3			0.19	0
10004708	2.3	3.7	3.3	0.777	1.3	4	3.3	2.3	0.68	1.7
10005522	4	4	3.7	0.973	4	3.7	2.7	4	0.90	2.7
10006326	3.7	3.3	2.7	0.803	3	3.3	1	0	0.46	2
10006729	4	4	4	1	4	3.7	4	4	0.98	3.3
10007122	0		3.7	0.333					0.00	2.7

Sheet1 Sheet2 Sheet3

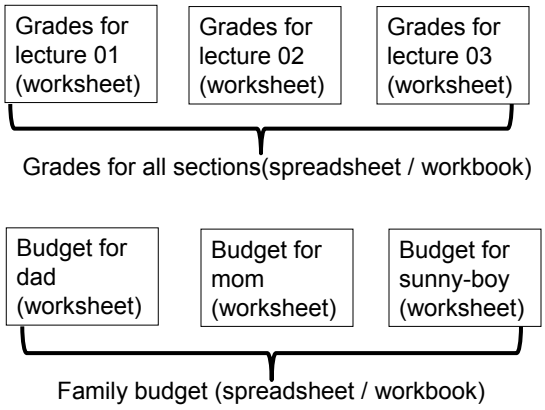
Worksheet

Spreadsheet

When To Use Multiple Worksheets

•Rules of thumb:

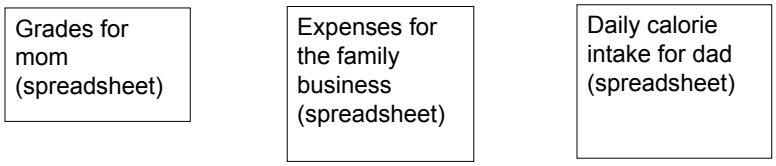
- When there are multiple sheets of related information, each group of information can be stored in it's own worksheet.



- Information from one worksheet may be used in another worksheet.

When Not To Use Multiple Worksheets

•If the information consists of groups of unrelated information then the information about each group should be stored in a separate spreadsheet/workbook rather than implementing it a spreadsheet with multiple worksheets.



Some Popular Spreadsheets

- MS-Excel:
  - Produced by Microsoft and it's part of the MS-Office suite of programs.
  - Why use it: The most popular spreadsheet (your sheets can be viewed and used by many people without additional work or modifications).
- Open Office:
  - A suite of programs produced by Sun Microsystems which includes a spreadsheet.
  - Documents produced with MS-Office may usually be viewed and edited with this program.
  - Why use it: It's free!

Some Popular Spreadsheets (2)

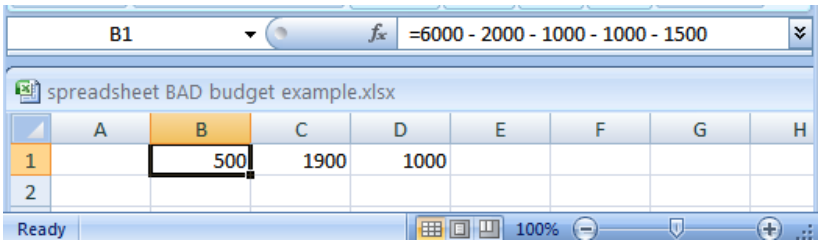
- Google spreadsheet:
  - Produced by the same company that made the Google web search engine.
  - Part of the "Google docs" suite of programs.
  - Documents can be saved in a variety of formats.
  - Why use it: It's free!
  - Normally documents are saved on the Google servers (it allows you to access documents from anywhere but there's limits on document sizes and the total amount that can be stored online).

Good Spreadsheet Design Principles

1. Make calculations explicit
2. Employ lookup tables when appropriate

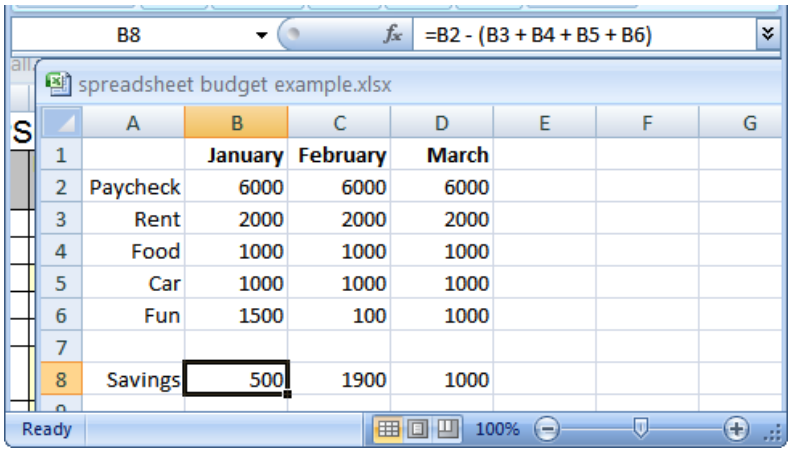
Example: Calculations Are Not Explicit

•Unless the formula is very obvious to the reader of the spreadsheet label all parts of a calculation.



Example: Calculations Are Shown In More Detail

- Whenever possible label the different parts of a calculation to make easier for the reader to interpret and understand how your calculations work.



	A	B	C	D	E	F	G
1		January	February	March			
2	Paycheck	6000	6000	6000			
3	Rent	2000	2000	2000			
4	Food	1000	1000	1000			
5	Car	1000	1000	1000			
6	Fun	1500	100	1000			
7							
8	Savings	500	1900	1000			

Using Lookup Tables

- Contain information that is referred to/used in a spreadsheet
- Example, grades:

Letter	Percentage
A	80 – 100%
B	70 – 79%
C	60 – 69%
D	50 – 59%
F	0 – 49%

Using Lookup Tables (2)

- All the entries in the 'letter grade column' will refer to the table on the right.

Term percentage	Letter grade		Min. percentage	Letter
80			80	A
45			70	B
67			60	C
36			50	D
86			0	F
67				
69				
83				
77				
55				
65				
67				
91				
84				
67				
59				
80				
71				
59				

Why Use Lookup Tables

- The values are made explicit.
- It minimizes the number of changes needed, changing the values in the table changes all the parts in the sheet that refer to that table.

Example Of A Lookup Function

	A	B	C	D	E	F	G
1	Percentage	Letter			Range	Min percentage	Letter
2	91	A			0 - 59	0	F
3	81	B			60 - 69	60	D
4	71	C			70 - 79	70	C
5	61	D			80 - 89	80	B
6	60	D			90 - 100	90	A

=LOOKUP(A2, $F$2:F$6, $G$2:$G$6)

- A2: Cell whose value is to be looked up
- $F$2:$F$6 Look in this range of cells for a match. Search for a match and stop at the row whose cell value is less than or equal to the value searched for or if there is no matches then shown an error.
- $G$2:$G$6 When a value is found in a cell in column 'F' put the value from the same row of column 'G' into the cell in column 'B'.

James Tam

What Representation Should Be Used In A Spreadsheet?

- Text?
- A graph or chart?
  - What type to use? (Pie, bar, line etc.)

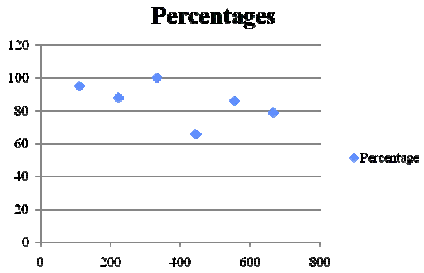
James Tam

The Benefits Of Using Text

- Text is the best representation to use when accuracy is paramount.
- Example term grades for individual students.

Student ID	Percentage
111	95
222	88
333	100
444	66
555	86
666	79

Vs.

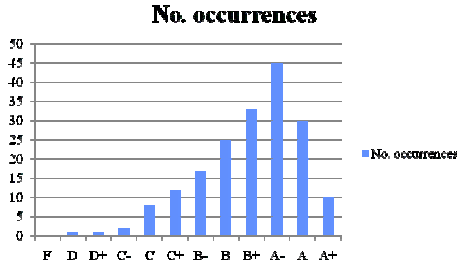


The Benefit Of Using A Graph

- Graphical representations can make a powerful impression!

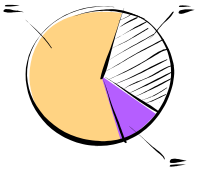
Letter	No. occurrences
F	0
D	1
D+	1
C-	2
C	8
C+	12
B-	17
B	25
B+	33
A-	45
A	30
A+	10

Vs.



Ways Of Graphically Representing Information

•Pie chart

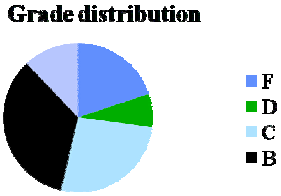


•Bar graph

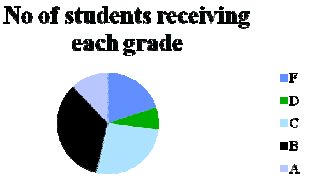
•Line graph

Pie Charts

•Good for showing proportions, how much of the whole does each item contribute.

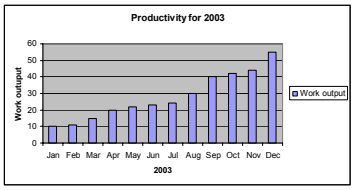


•It's poor for showing exact numeric values.

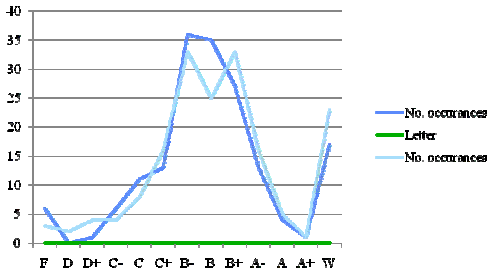


Bar And Line Graphs

•For showing trends



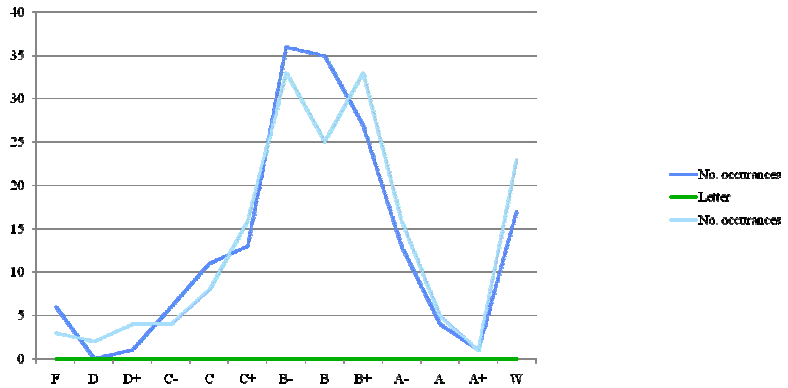
•Comparing functions



James Tam

Rules Of Thumb For Graphs

1. The X axis is used to plot known data (e.g., letter grades), while the Y axis is used to plot the unknown data (e.g., the number of students who received particular letter grades).



James Tam

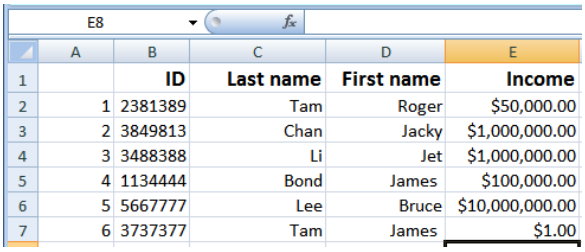
Rules Of Thumb For Graphs (2)

2. Bar graphs are used to plot non-continuous data e.g., the number of patients that go to different hospitals.
3. Line graph are used to plot continuous data e.g., mortality trends over time.

Sorting Data

•Spreadsheet information can be ordered to different criteria.

•Example (unsorted information):

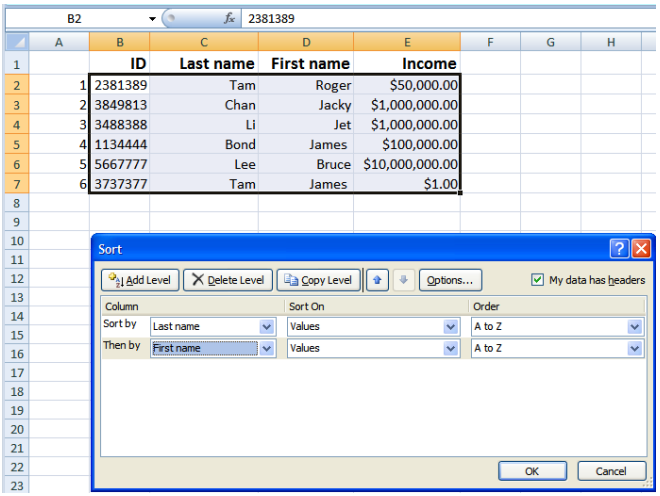


E8

	A	B	C	D	E
1		ID	Last name	First name	Income
2	1	2381389	Tam	Roger	$50,000.00
3	2	3849813	Chan	Jacky	$1,000,000.00
4	3	3488388	Li	Jet	$1,000,000.00
5	4	1134444	Bond	James	$100,000.00
6	5	5667777	Lee	Bruce	$10,000,000.00
7	6	3737377	Tam	James	$1.00

Sorting Data (2)

- The data can be sorted by one (or more) of the categories in the sheet.



	ID	Last name	First name	Income
1	2381389	Tam	Roger	$50,000.00
2	3849813	Chan	Jacky	$1,000,000.00
3	3488388	Li	Jet	$1,000,000.00
4	1134444	Bond	James	$100,000.00
5	5667777	Lee	Bruce	$10,000,000.00
6	3737377	Tam	James	$1.00

Sorting Data (3)

- In this example the data is sorted first by last name and then by first name.

F13

	ID	Last name	First name	Income
1	1134444	Bond	James	$100,000.00
2	3849813	Chan	Jacky	$1,000,000.00
3	5667777	Lee	Bruce	$10,000,000.00
4	3488388	Li	Jet	$1,000,000.00
5	3737377	Tam	James	$1.00
6	2381389	Tam	Roger	$50,000.00

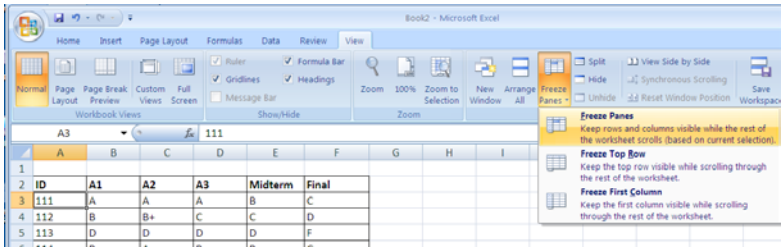
Viewing A Large Spreadsheet

- Quite often a spreadsheet will be larger than the visible area of the computer screen.
- This is problematic if there is information that must remain visible on screen at all times.

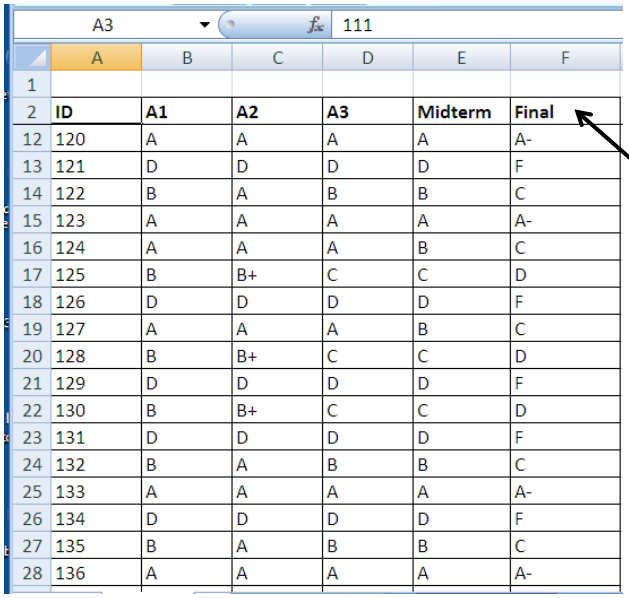
	A	B	C	D	E	F
1						
2	ID	A1	A2	A3	Midterm	Final
3	111	A	A	A	B	C
4	112	B	B+	C	C	D
5	113	D	D	D	D	F
6	114	B	A	B	B	C
7	115	A	A	A	A	A-
8	116	A	A	A	B	C
9	117	B	B+	C	C	D
10	118	D	D	D	D	F
11	119	B	A	B	B	C
12	120	A	A	A	A	A-
13	121	D	D	D	D	F
14	122	B	A	B	B	C
15	123	A	A	A	A	A-
16	124	A	A	A	B	C
17	125	B	B+	C	C	D
18	126	D	D	D	D	F
19	127	A	A	A	B	C
20	128	B	B+	C	C	D
21	129	D	D	D	D	F
22	130	B	B+	C	C	D

Viewing A Large Spreadsheet (2)

- Parts of the screen (top row, first column or any arbitrary row) can be 'frozen' so it remains visible as you scroll through the spreadsheet.



Viewing A Large Spreadsheet (3)



	A	B	C	D	E	F
1						
2	**ID**	**A1**	**A2**	**A3**	**Midterm**	**Final**
12	120	A	A	A	A	A-
13	121	D	D	D	D	F
14	122	B	A	B	B	C
15	123	A	A	A	A	A-
16	124	A	A	A	B	C
17	125	B	B+	C	C	D
18	126	D	D	D	D	F
19	127	A	A	A	B	C
20	128	B	B+	C	C	D
21	129	D	D	D	D	F
22	130	B	B+	C	C	D
23	131	D	D	D	D	F
24	132	B	A	B	B	C
25	133	A	A	A	A	A-
26	134	D	D	D	D	F
27	135	B	A	B	B	C
28	136	A	A	A	A	A-

You Should Now Know

- How electronic spreadsheets evolved out of a paper version
- Simple principles of graphic design applied to spreadsheets
- The difference between absolute and relative cell references
- The organization and grouping of important Excel functions
- The difference between a spreadsheet and a worksheet, when to employ multiple spreadsheets vs. multiple worksheets
- Good design principles for spreadsheets
- Guidelines for determining what representation to employ in a spreadsheet
- How and why to freeze different parts of a spreadsheet view