

The Basics Of Excel

- These common features includes assumed prior knowledge. The purpose of these notes is for students who are missing some of the basics.
- It also includes some useful features that you may not be familiar with but because of time constraints they won't be covered in teaching tutorial.

MS-Excel tutorial notes by James Tam

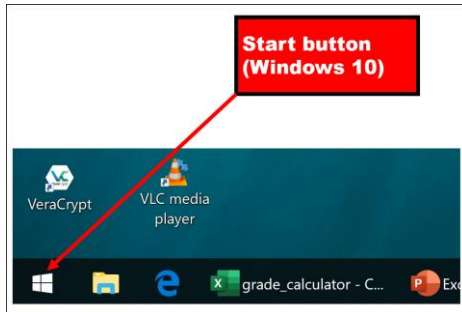
Audience/Purpose

- These resources are meant to show a beginner the common features of Excel.
- The focus is showing one way that features may be run rather than distracting the reader and showing all possible ways.
 - Learning multiple methods may shift the focus from using a useful feature to memorizing all the ways in which that feature may be run.
- Because of the rudimentary nature of the material, the focus is on how to **run features** rather than *why use* them (it should be self evident why one would want to save a document).

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Starting Excel: Invoking The Start Menu

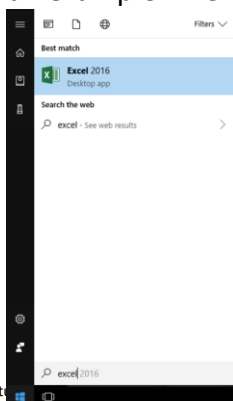
- The process is similar to the Word tutorial (or starting any program in Windows).
- Click on the Start Button (the exact appearance may vary depending upon the version of Windows that you are running).



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Starting Excel: Running Excel

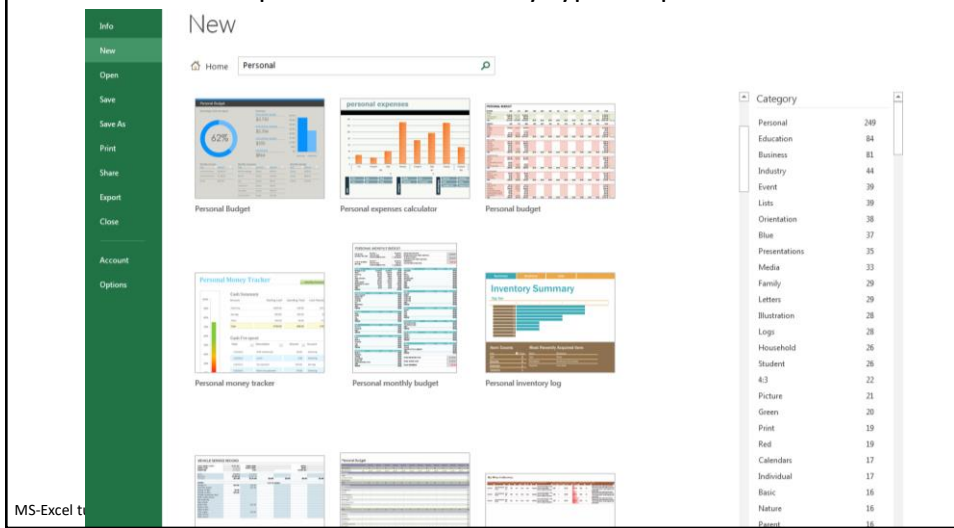
- With the Start button clicked type in “Excel” (the name of the program you wish to run).
- (There are many ways of starting a program in Windows, this is an example where there is no “one right way” to do things).



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Templates

- Pre-created spreadsheets for many types of problems



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Example Template

The screenshot shows an Excel spreadsheet with two tables. The first table is titled 'Monthly Income' and the second is 'Monthly Expenses'. Both tables compare 'Projected' and 'Actual' values and show the resulting 'Variance' with color-coded indicators (red for negative, green for positive, yellow for zero).

Monthly Income	Projected	Actual	Variance
Income 1	4,000	3,000	-1,000
Income 2	1,300	1,400	100
Extra income	300	300	0
Other			0
TOTAL INCOME	5,600	4,700	-900

Housing Expense	Projected	Actual	Variance
Mortgage or rent	1,000	500	500
Second mortgage or rent		0	0
Phone	54	100	-46
Electricity	44	56	-12
Gas	22	28	-6
Water and sewer	8	8	0
Cable	34	34	0
Waste removal	10	10	0
Maintenance or repairs	23	0	23
Supplies	0	0	0
Other	0	0	0
SUBTOTAL	1,195	736	459

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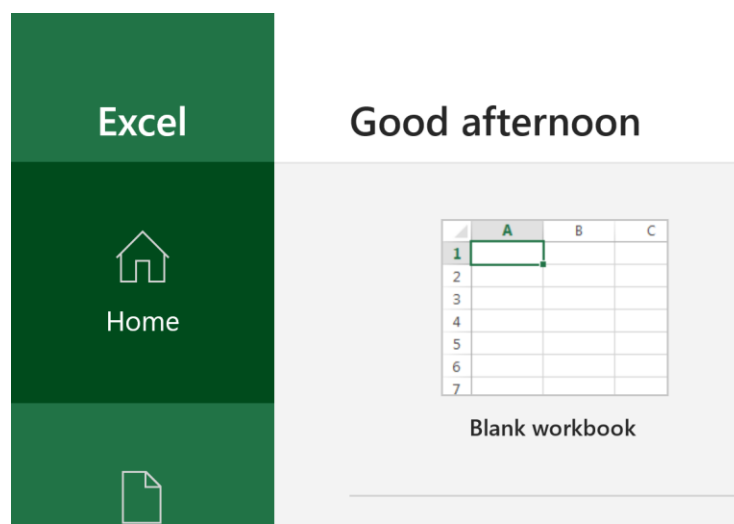
Budget Planner

Terminology

- A typical file produced by Word is referred to as a 'document'.
- A typical file produced by a spreadsheet program such as Excel or Google docs is often described as a 'spreadsheet'.
- Be aware that Microsoft uses it's own terminology.
 - A spreadsheet (file produced by a spreadsheet program such as Excel) is described as a 'workbook' by Microsoft.

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Creating A New Blank Worksheet

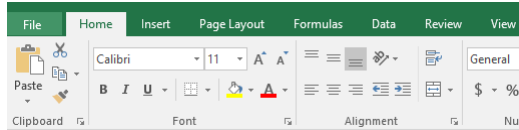


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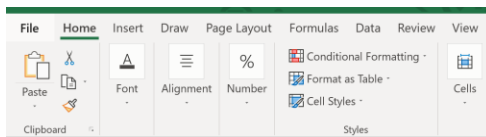
The Excel Ribbon

- Similar to Word, the features of Excel can be accessed via the ribbon.
- The tabs differ slightly between Office 2016 and 2019 (Draw)

– Office 2016:



– Office 2019:



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Quick Summary Of Features In Each Tab Of The Ribbon

- **File**
 - Operations on an Excel spreadsheet (a spreadsheet 'file'): save, save-as, print etc.
- **Home**
 - Many commonly used features: copy-cut-paste, formatting text, cell alignment and even more advanced formatting features such as "conditional formatting".
- **Insert**
 - Charts, pictures, shapes, symbols, pivot tables and more.
- **Page Layout**
 - For configuring Excel when printing but other features, such as setting a background image, for the spreadsheet can be done here.

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Quick Summary Of Features In Each Tab Of The Ribbon (2)

- **Formulas**
 - Groups all the built-in formulas (e.g. SUM, AVERAGE etc.) into categories
 - Also it includes the ability to check or audit formulas
- **Data**
 - Includes: the ability to get data from other sources (e.g. MS-Access database), sort and filter data, run different scenarios “what-if analysis” on the data and determine results.
- **Review**
 - Similar to the identically named feature in Word and includes: the ability to annotate the spreadsheet, translate to other languages, spell check and thesaurus look up.

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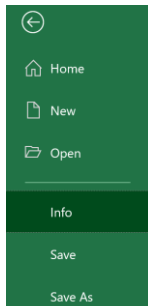
Quick Summary Of Features In Each Tab Of The Ribbon (3)

- **View**
 - Allows the spreadsheet to be viewed in different ways (e.g. zoom in and out, lock or ‘freeze’ parts so they stay visible even when scrolling through a long spreadsheet).
- **Draw (Office 2019 only)**
 - Some of the ability to insert simple shapes (e.g. lines, textbox, simple geometric shapes) was moved from “Insert” to “Draw” with new abilities added (e.g. adding a physical ruler that can assist in freehand drawing).
- Relevant additional details will be provided in future tutorials and in lecture.
- A good overview of the Excel tabs in the ribbon:
 - <https://openoregon.pressbooks.pub/beginningexcel/chapter/1-1-overview-of-microsoft-excel/>

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Saving/Copying A Spreadsheet

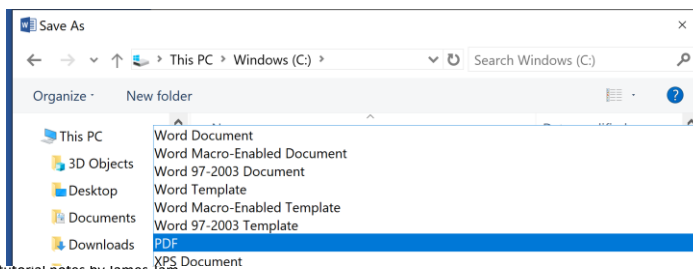
- Similar to saving Word documents
 - Save: save the spreadsheet under the current name (if not currently named then a prompt to enter the name will appear).
 - Save As: allows a copy of the spreadsheet to be saved under a different name.
 - Similar to Word documents Excel spreadsheets can also be tagged.



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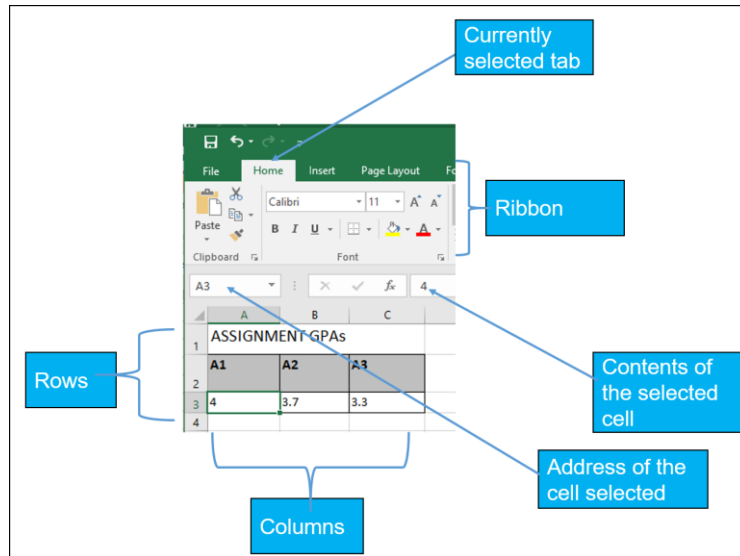
Creating PDF Version Of A Spreadsheet

- PDF (Portable document Format) documents
 - Allows documents to be saved and viewed with different computer operating systems.
 - Ensures a consistent layout and formatting regardless of operating system.
- Creating PDF documents using Excel via the “Save As” feature.
 - Select ‘PDF’ as the file type under the pull down menu.



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Excel Basics



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Some Ways Of Navigating An Excel Spreadsheet

Keystroke	Effect in Word
↑ (up arrow)	Cursor moves up one row
↓ (down arrow)	Cursor moves down one row
← (left arrow)	Cursor moves left one column
→ (right arrow)	Cursor moves right one column
Home key	Cursor moves to the first column (Column A)
End Key	Toggles End Mode on/off ¹
Page up	Move a *window full* of rows up ²
Page down	Move a *window full* of rows down ²

For a full list of keyboard shortcuts (include ones that allow navigating an Excel sheet): <https://support.office.com/en-us/article/Keyboard-shortcuts-in-Excel-for-Windows-1798d9d5-842a-42b8-9c99-9b7213f0040f>

¹ In End mode, you can press an arrow key to move to the next nonblank cell in the same column or row as the active cell.

² The number of rows that will vary depending upon the size of the Excel window.

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Some Ways Of Navigating An Excel Spreadsheet (2)

Keystroke	Effect in Word
<Alt>-<Page up>	Move a *window full* of columns left ³
<Alt>-<Page down>	Move a *window full* of columns right ³
<Control>-↑	Go to the first row ⁴
<Control>-↓	Go to the last row ⁵

For a full list of keyboard shortcuts (include ones that allow navigating an Excel sheet): <https://support.office.com/en-us/article/Keyboard-shortcuts-in-Excel-for-Windows-1798d9d5-842a-42b8-9c99-9b7213f0040f>

³ The exact number of columns will vary depending upon the size of the Excel window.

⁴ The first row will be the first column with data, or if that row is the current one or the sheet is it empty then it will be the first physical row 1.

⁵ The last row will be the last row with data, or if that row is the current one or the sheet is it empty then it will be the last physical row 1, 648, 576.

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Some Ways Of Navigating An Excel Spreadsheet (3)

Keystroke	Effect in Word
<Control>-←	Go to the first column ⁶
<Control>-→	Go to the last column ⁷

For a full list of keyboard shortcuts (include ones that allow navigating an Excel sheet): <https://support.office.com/en-us/article/Keyboard-shortcuts-in-Excel-for-Windows-1798d9d5-842a-42b8-9c99-9b7213f0040f>

⁶ The first column will be the first column with data, or if that column is the current one or the sheet is it empty then it will be the first physical column A.

⁷ The column will be the last column with data, or if that column is the current one or the sheet is it empty then it will be the last physical column XFD.

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Other Ways Of Navigating Excel

Clicking directly in the editing area

Clicking in the scrollbar

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Entering Something Into A Cell

- Click on a cell

	A	B	C
1	ASSIGNMENT GPAs		
2	A1	A2	A3
3	3.75	3.5	3.3

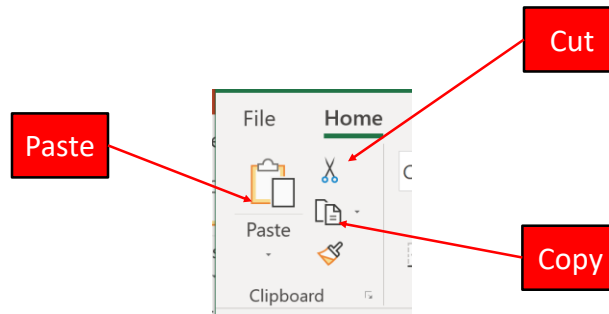
- Enter the data or formula into the cell

	A	B	C
1	ASSIGNMENT GPAs		
2	A1	A2	A3
3	4.0	3.5	3.3

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Copy/Cut-Pasting

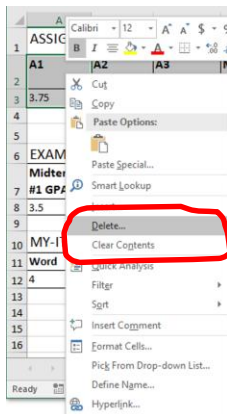
- Right click and select the 'Cut' or 'Copy' option.
 - Cut: the selection will be removed from the spreadsheet (when pasted)
 - Copy: the selection will be duplicated (when pasted)
- These features can also be accessed via the Home tab as well.



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Removing What's In A Cell

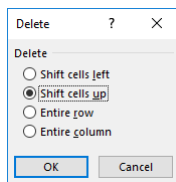
- Options to do this can be accessed by right clicking when a cell or cells have been selected in Excel



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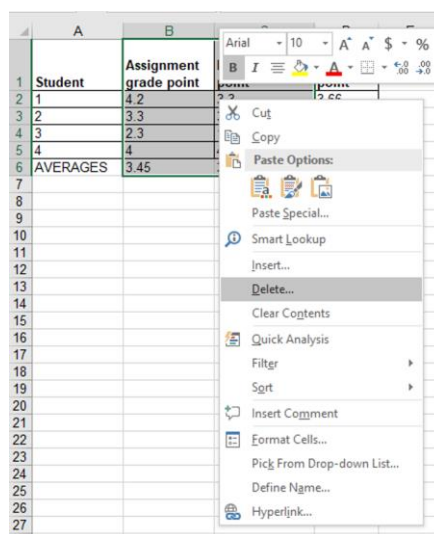
Removing What's In A Cell (2)

- Clear contents (this feature can also be invoked by selecting a cell or cells and pressing the 'delete' key)
 - The contents of the cell are removed.
 - Only the data is removed, other information such as background coloring and font formatting (e.g. bolding) remains.
- Delete contents
 - Does not just affect a single cell.
 - This operation will delete a row/rows or column/columns from the spreadsheet (resulting in other cells 'moving').



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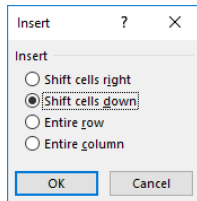
Deletions: Right Click



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Inserting Rows Or Columns

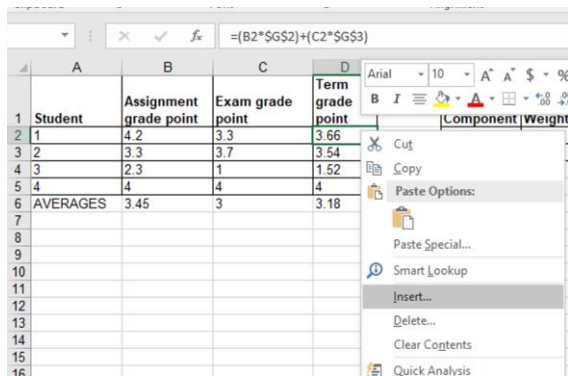
- Similar to (but in reverse of) deleting rows or columns, this operation will shift over other parts of the spreadsheet:



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Inserting Rows And Columns

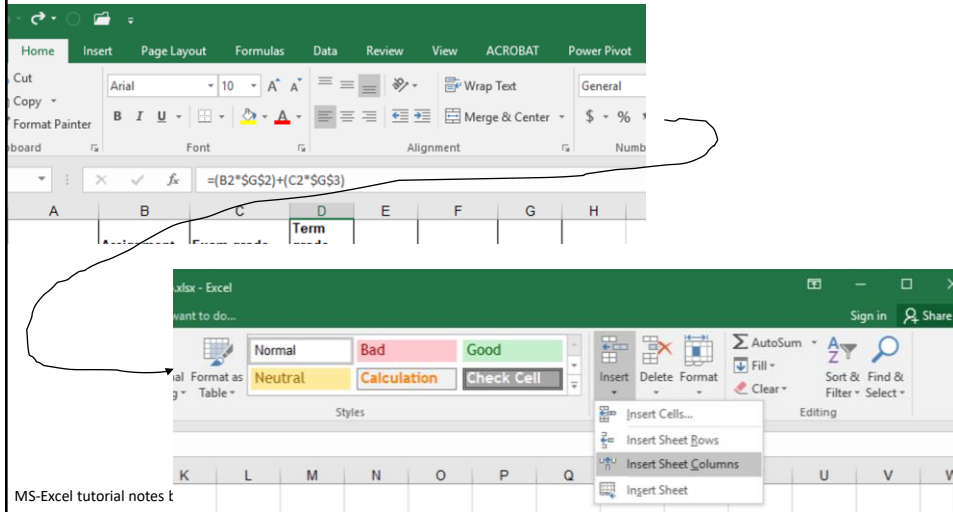
- Can be done via 'right clicking' at the insertion point



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Insert Rows And Columns

- Can also be done via: Home->Insert



Contents Of A Cell: Types

- **Raw data:** also referred to as 'constants'

	A	B	C
1	Student	Term percent	Letter
2	111	75	B

- **Label:** describe the contents of another cell

	A	B	C	D
1	Student	Term percent	Letter	
2	111	75	B	

- **Formula:** derived values, usually from the raw data (e.g., calculations: $=2+2$, lookup values: $=D2*2$, functions: $=VLOOKUP$)

	A	B	C	D
1	Student	Term percent	Letter	
2	111	75	$=VLOOKUP$	

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Distinguishing Formulas From Data Or Labels

- In Excel all formulas must be preceded by the '=' symbol (assignment) to distinguish it from a label
- **Example spreadsheet: 1_formulas**

– Label

2 + 2

	A	B	C	D
1	2	2	2+2	

– Formula

= 2 + 2

	A	B	C	D
1	2	2	4	

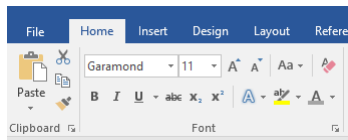
For the sake of brevity, you can assume that all formulas in this section will be preceded by the assignment operator '='

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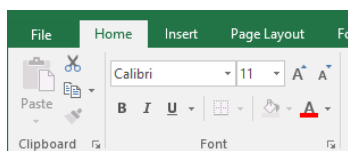
Formatting Text

- It's similar to Word, text formatting icons can be found under the Home tab in the Font group.

– Word



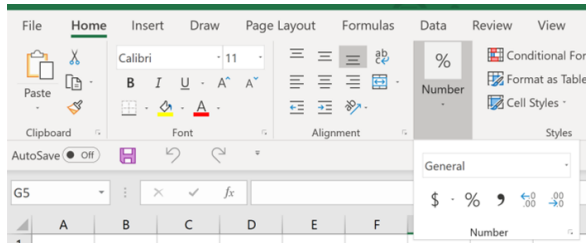
– Excel



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Formatting Numbers

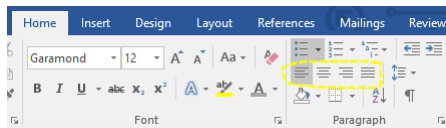
- Properties of numerical data: number of fractional digits displayed, should currency symbols be displayed, separators between groups of numbers etc.



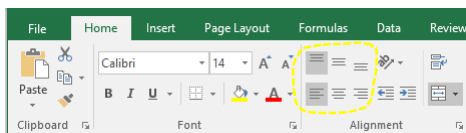
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Changing Cell Alignment

- Again it's similar to Word but the icons are located in a different group.
 - Word (Paragraph group)



- Excel (Alignment group)

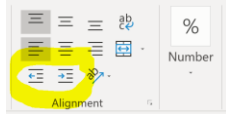


- Also with Excel there's icons for vertical alignment (the 3 icons on the first row) as well as horizontal alignment (the 3 icons on the second row).

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Changing Cell Indenting

- Indenting can be increased or decreased via:
 - Home -> Alignment group



- No indenting levels (all indenting levels are identical).

	A	B	C	D	E
1	ASSIGNMENT GPAs				
2	A1	A2	A3	MA3a	MA3b
3	3.75	3.5	3.3	3.8	3.8

- Indenting applied to Row 2 & 3.

	A	B	C	D	E
1	ASSIGNMENT GPAs				
2	A1	A2	A3	MA3a	MA3b
3	3.75	3.5	3.3	3.8	3.8

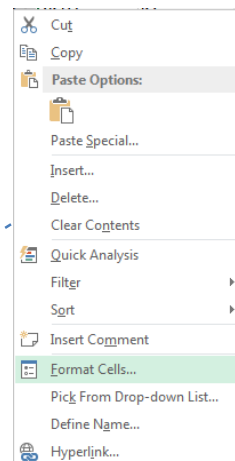
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Other Ways Of Formatting Cells Via “Right Click”

- Excel provides the ability to format the spreadsheet in various locations of the ribbon.
- You also can access these functions in the context of a cell or cells in the spreadsheet.
 1. Select a cell or cells for which you wish to apply similar formatting effects.

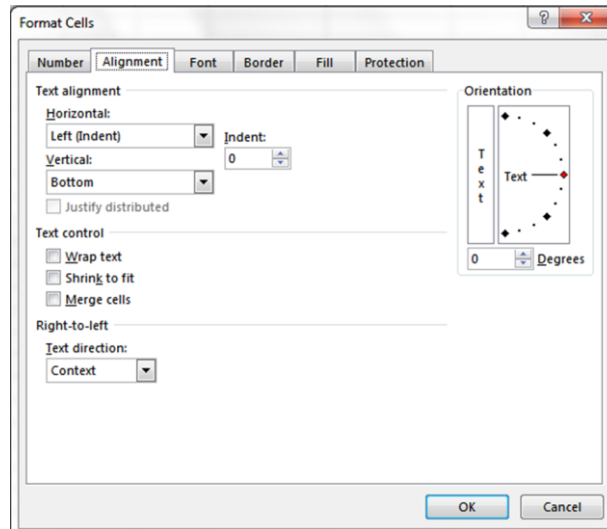
750000	75000	10
1000000	100000	14
2000000	200000	28
3000000	300000	42
4000000	400000	57

2. Right click and select “Format Cells”



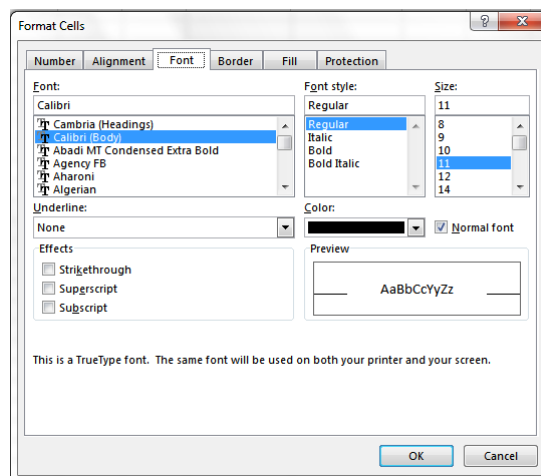
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Formatting Cells: Text Alignment



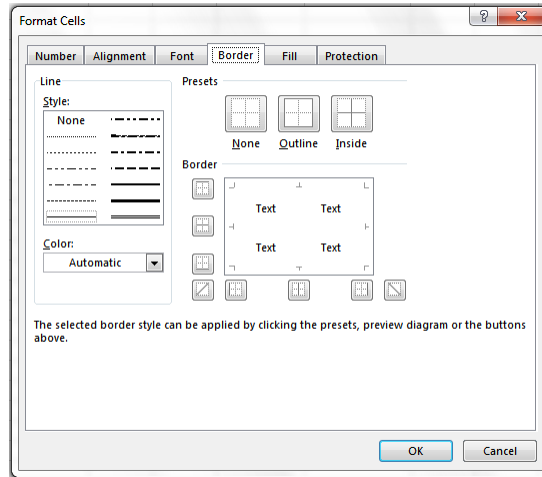
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Formatting Cells: Font (Text) Formatting



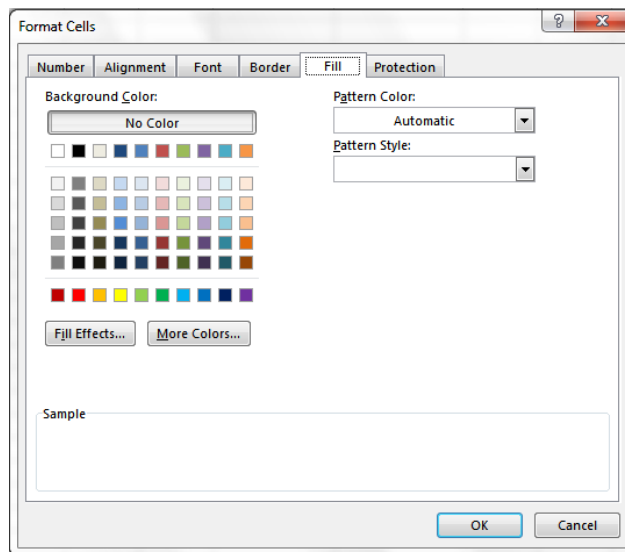
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Formatting Cells: Borders Around Cells



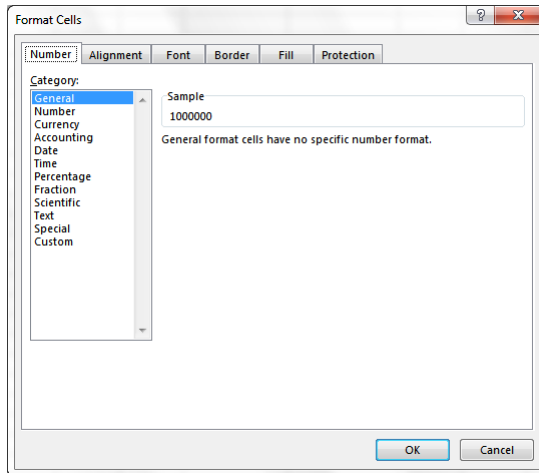
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Formatting Cells: Cell Fill Effects



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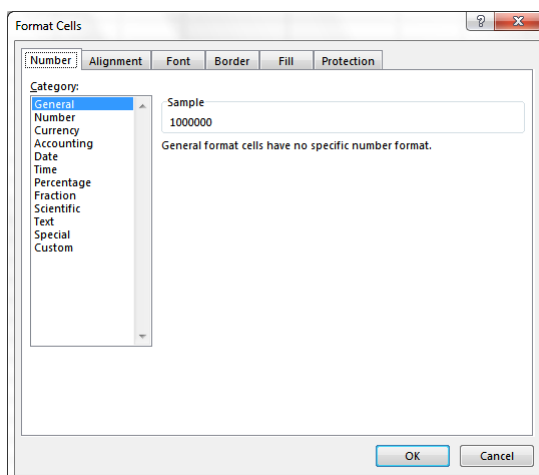
Formatting Cells: Choices Of Cell Data



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- **General:** No special format
- **Number:**
 - Separator (1 comma for 3 digits)
 - Several options for displaying negative numbers
- **Currency:**
 - Currency sign appears
 - Several options for displaying negative numbers
 - Columns aligns decimal points
- **Accounting:**
 - Similar to currency but no special options for displaying negative values
- **Date, Time:**
 - Both allow the display to appear in different formats
- **Percentage:** E.g. 100%
- **Fraction:** e.g. when 0.75 is typed in it displays as 3/4

Formatting Cells: Choices Of Cell Data



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- **Scientific:** E.g. 1. 23E+06
 - Decimal point shifting = Exponent
- **Text:**
 - Treats everything (even numbers) as text
 - Cell data is displayed exactly as entered.
- **Special:**
 - Country specific information (e.g. zip)
- **Custom:**
 - You can create your own formats e.g. ID number = A22-B (alpha, two digits, dash, alpha)

Formatting Cells: Choices Of Cell Data, Example

- **Example spreadsheet:** data_types
- (You can view the effect of setting different formatting types in this spreadsheet).

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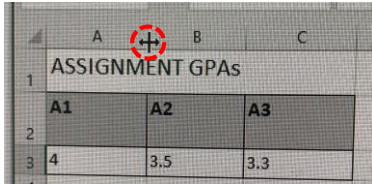
Data Too Big For Your View

- Covered in the lectures notes
 - Freeze panes
 - Simple merging of cells (merging cells on a single row).
- Covered in the introductory tutorial notes (these notes)
 - Resizing rows or columns
 - Wrap the data
 - Merge data (other ways of merging as well as merging multiple rows as well as multiple columns)

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Resize Width (Column)

- Resizing columns:
 - Move the mouse to just after the end of the column to be resized (mouse pointer icon changes appearance to indicate Excel is in “**resize column mode**”).



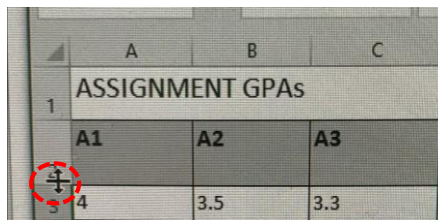
	A	B	C
1	ASSIGNMENT GPAs		
2	A1	A2	A3
3	4	3.5	3.3

- In the image Column A can be resized.
- While the pointer is in resize mode, move it left (reduce width) or right (increase width).

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Resize Height (Row)

- Resizing rows:
 - Move the mouse to just after the bottom of the row to be resized (mouse pointer icon changes appearance to indicate Excel is in “**resize row mode**”).



	A	B	C
1	ASSIGNMENT GPAs		
2	A1	A2	A3
3	4	3.5	3.3

- In the image Row 2 can be resized.
- While the pointer is in resize mode move it up (reduce width) or down (increase width).

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Resizing Multiple Rows Or Columns

- To resize **all** columns or rows:
 - Select all the columns or rows by pressing the <Ctrl> key and the 'A' key simultaneously.
 - Now when the mouse pointer is in column (or row) resize mode **all the columns (or rows)** in the spreadsheet will be resized.
- To resize **selected** columns or rows:
 - Press the <Ctrl> key and without releasing the key, click on the columns (or rows) to be resized.
 - This allows multiple columns (or rows) to be selected.
 - Now when the mouse pointer is in a column (or row) resize mode **all the selected** columns (or rows) in the spreadsheet will be resized.

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Wrapping Data

- When the data in a cell is too wide for a column the data can be 'wrapped' or made to continue on the next line.
- **Example starting spreadsheet:**
"data_too_wide" (Row 1 data is too wide for the column)

	A	B	C	D	E
1	Student	Assignment grade point	Exam grade point	Term grade point	
2	1	4.2	3.3	3.66	

- **Example starting spreadsheet (Row 1 text is wrapped):**
wrapped_data

	A	B	C	D
1	Student	Assignment grade point	Exam grade point	Term grade point
2	1	4.2	3.3	3.66
3	2	3.3	3.7	3.54

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Merging Data

- **Example starting spreadsheet:**
merging_example_too_wide_data

Cell A1: CPSC 203

	A	B	C	D
1	CPSC 203	Term grades, lecture 01		
2	Student	Assignment grade point	Exam grade point	Term grade point
3	1	4.2	3.3	3.66
4	2	3.3	3.7	3.51

B,C,D: before merge

Cell B1: Term grades, lecture 01

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Options For Merging Cells In Excel: Merge & Centre

- **“Merge & center”** (e.g. 7B: Columns B-D “after” merge):
“merging_exammple_merge_and_centre”

	A	B	C	D
1	CPSC 203	Term grades, lecture 01		
2	Student	Assignment grade point	Exam grade point	Term grade point

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Options For Merging Cells In Excel: Merge Cells

- **Merge across:** “merging_example_merge_cells”
 - Description of how it works from MS-Excel tooltip: “Merge the selected cells into one cell”)
 - JT’s translation of MS-Excel help: only the data in the top left most cell in the selected range is retained.
 - e.g. Merging in the range A2:D6 only retains the data in Cell A2.

	A	B	C	D
1	CPSC 203grades, lecture 01			
2	Student	Assignment grade point	Exam grade point	Term grade point
3	1	4.2	3.3	3.66
4	2	3.3	3.7	3.54
5	3	2.3	1	1.52
6	4	4	4	4
7	AVERAGES	3.45	3	3.18
8				

Before

	A	B	C	D
1	CPSC 203grades, lecture 01			
2				
3				
4				
5				
6	Student			
7	AVERAGES	#DIV/0!	#DIV/0!	#DIV/0!
8				

After

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Merge Cells: Unmerge Applied

- **“Unmerge cells”:** only unmerges the cells, data is not restored

	A	B	C	D
1	CPSC 203grades, lecture 01			
2	Student			
3				
4				
5				
6				
7	AVERAGES	#DIV/0!	#DIV/0!	#DIV/0!

After (unmerge)

- JT: instead of using ‘Unmerge’ use the ‘undo’ feature of MS-Office: Simultaneously press the keys <Ctrl>-<y>

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Options For Merging Cells In Excel: Merge Across

- **“Merge across”**: “merging_example_merge_across”
 - Description of how it works from MS-Excel tooltip: “Merge selected cells in the same row into one larger cell”
 - JT’s translation of MS-Excel help: only the data in the left most column in the selected range is retained.
 - e.g. Merging in the range A2:D6 only retains the data in Col A.

	A	B	C	D
1	CPSC 203grades, lecture 01			
2	Student	Assignment grade point	Exam grade point	Term grade point
3	1	4.2	3.3	3.66
4	2	3.3	3.7	3.54
5	3	2.3	1	1.52
6	4	4	4	4
7	AVERAGES	3.45	3	3.18
8				

Before

	A	B	C	D
1	CPSC 203grades, lecture 01			
2	Student			
3	1			
4	2			
5	3			
6	4			
7	AVERAGES	#DIV/0!	#DIV/0!	#DIV/0!

After (merge across)

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Merge Across: “Taking Back” Results

- Similar to the “Merge cells” you should use the ‘Undo’ feature rather than the ‘Unmerge’ feature if you want to retain your original data in the merged cells.

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Hiding/Showing Columns

- Sometimes you don't want to delete a column (data needed e.g. student ID) but you want to temporarily obscure one or more columns
- Hide:
 - Select columns to hide, right click and select 'hide' (click at very top of column)
 - (Press control and click on the columns to hide 1+ non-adjacent columns)
- Show:
 - Select the column adjacent to the hidden column and select 'show' (the mouse pointer changes appearance)
 - (Or simply move the mouse to the appropriate location – see above point – and then 'drag' a hidden column into appearance)
- Specific resource for this feature
 - <https://support.office.com/en-us/article/Hide-or-show-rows-or-columns-659c2cad-802e-41e1-b111-443579f8>

MS-Excel tutorial notes by James Tam

Hiding/Showing Rows

- Hiding/showing rows works the same way but select a row or rows by clicking to the far left not the top
- Individual cells cannot be hidden

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How To Enter Formulas That Refer To Other Cells

- **Approach 1:** manually type in the formula
 - Click on a cell where you want to enter the formula e.g. click on C2
 - Type in the formula manually e.g. type =A2*B2

	A	B	C
1	Income	Tax rate	Tax owed
2	100000	0.25	=A2*B2

- **Approach 2:** type and click (used when a formula refers to a cell)
 - Click on a cell where you want to enter the formula e.g. click on cell C2
 - When you get to the part of the formula that refers to another cell then just click on the cell rather than typing in the information e.g. Entering formula into cell C2, after typing the '=' click in in Cell A2

	A	B	C	D
1	Income	Tax rate	Tax owed	
2	100000	0.25	=A2	

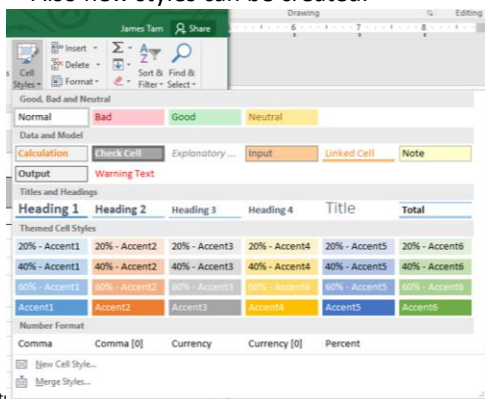
2) Reference to Cell
A2 appears here

1) Click here

MS-Excel tutorial notes by James Tam

Using Pre-Created Styles

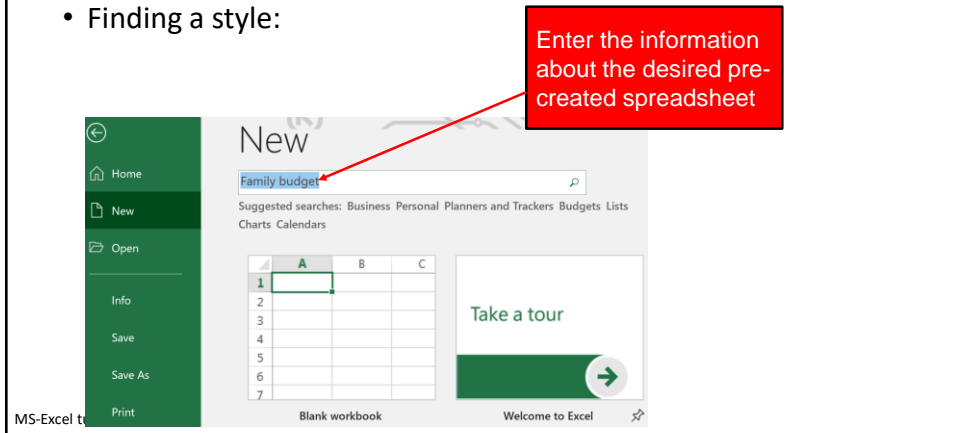
- Similar to Word, Excel comes with pre-created text styles (font, color, font effects such as bolding etc.)
 - Home -> Styles : Cell Styles
 - Also new styles can be created.



MS-Excel t

Using A Pre-Created Spreadsheet

- Similar to using pre-created styles but these sheets provide more e.g. labeled headings and calculations for a family budget in addition to pre-set formatting effects.
- Finding a style:



Headers And Footers

Header: appears at the top of each page

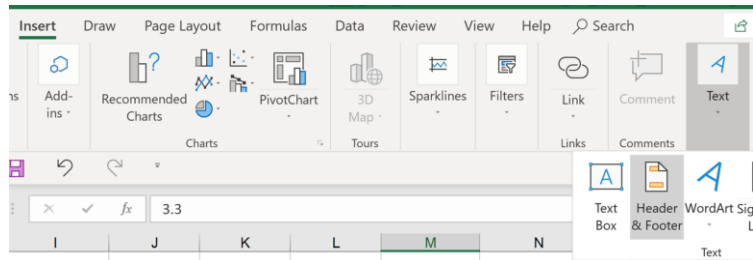
Footer: appears at the bottom of each page

HEADER: CPSC 203 Grade calculator					
ASSIGNMENT GPA					WEIGHTED GP
A1	A2	A3	MATh	MATh	Weighted assignment
2.75	3.5	3.3	3.4	3.4	2.95
EXAM GPAs					
Midterm #1	Midterm #2	Final exam			
GPA	GPA	GPA			
3.5	3.3	2.7			
MY-IT lab simulation exam GPA					
Mid	Exam				
4	4				
FOOTER: Example by James Tam					

MS-Excel tutorial notes by James Tam

Inserting Headers And Footers

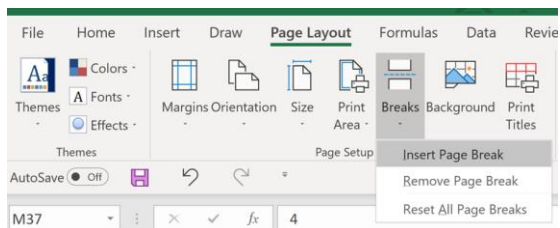
- Insert -> Text : Header & Footer



<https://support.office.com/en-us/article/Headers-and-footers-in-a-worksheet-CAE2A88C-64A7-42AB-96A4-28D2FC16AD31>
MS-Excel tutorial notes by James Tam

Page Breaks

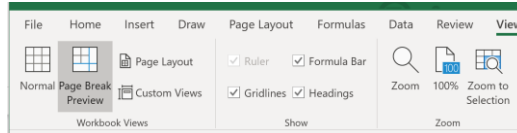
- Inserting or editing page breaks:
 - Page Layout -> Page Setup : Breaks (Insert Page Break / Remove Page Break / Reset All Page Breaks)



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Page Breaks

- Viewing the location of page breaks:
 - View -> Workbook Views : Page Break Preview



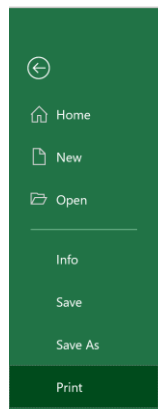
- The heavy blue line signifies a break (in the example below Row 34 is on a new page).

	J	K	L	M	N
1					
2	TBA1	TBA2	TBA3	TBA4	Weighted TBA
28	4	3.7	2.7	4	0.90
29	4	4	4	3.7	0.98
30	3	3.7	3.7	4	0.90
31		0	4	4	0.50
32	1.3	1.7	3.7	2.7	0.59
33					0.00

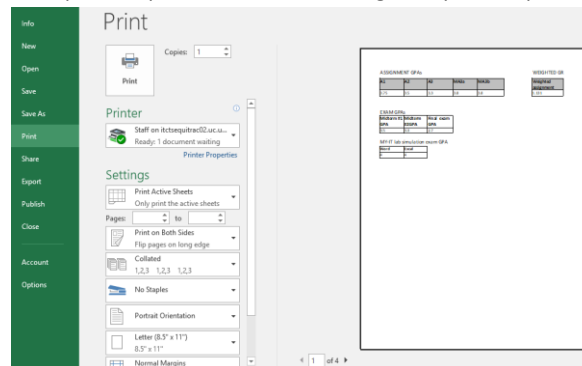
<https://support.office.com/en-us/article/Set-or-clear-a-print-area-on-a-worksheet-27048af8-a321-416d-ba1b-8592e118099e>
MS-Excel tutorial notes by James Tam

Printing An Entire Spreadsheet

- File -> Print



Print preview provided when selecting the option to print



MS-Excel tutorial notes by James Tam

Print Orientation: Portrait

- This the default
- “Longer than wider”

ASSIGNMENT GPAs					WEIGHTED GF
A1	A2	A3	MA3a	MA3b	Weighted assignment
1.75	1.5	1.3	1.8	1.8	1.13

EXAM GPAs		
Midterm #1	Midterm	Final exam
GPA	#2 GPA	GPA
1.5	1.3	2.7

MY-IT lab simulation exam GPA	
Word	Excel
4	4

MS-Excel t

Print Orientation: Landscape

- “Wider than longer”

ASSIGNMENT GPAs					WEIGHTED GRADES		
A1	A2	A3	MA3a	MA3b	Weighted assignment	Weighted Midterm #1	Weighted Midterm #2
1.75	1.5	1.3	1.8	1.8	1.131	0.7	0.66

EXAM GPAs		
Midterm #1	Midterm	Final exam
GPA	#2 GPA	GPA
1.5	1.3	2.7

MY-IT lab simulation exam GPA	
Word	Excel
4	4

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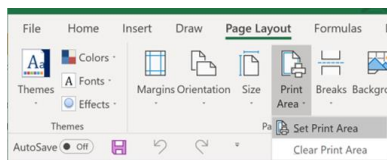
Some Other Print Options

- **Scaling:** the printed size of the spreadsheet can be changed to fit more (or less) of the sheet on each page.
- **Margins:** similar to Word, the size of the margins surrounding the spreadsheet can be customized.

MS-Excel tutorial notes by James Tam

Setting A Print Area

- Filters printing so only portions of a spreadsheet are printed.
- **Setting the print area:**
 - Page Layout -> Page Setup : Print Area -> Set Print Area



- **Viewing the print area via print preview**
 - File -> Print

<https://support.office.com/en-us/article/Set-or-clear-a-print-area-on-a-worksheet-27048af8-a321-416d-ba1b-e99ae2182a7e>

MS-Excel tutorial notes by James Tam

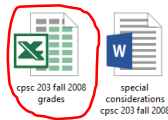
Converting Between Versions Of Excel

- Different version of Excel have different features
 - (Features of 2007+ vs. earlier versions):
 - <https://support.office.com/en-us/article/excel-formatting-and-features-that-are-not-transferred-to-other-file-formats-8fdd91a3-792e-4aef-a5bb-46f603d0e585>
 - (Using the latest version of Excel with spreadsheets created with older versions)
 - <https://support.office.com/en-us/article/Use-Excel-with-earlier-versions-of-Excel-2fd9ffcb-6fce-485b-85af-fecfd651a5ac>
- Checking for compatibility issues in a document
 - File->Info->Check for issues->Check compatibility
- Converting older versions to the newest version of Excel
 - File->Info->Convert (the 'convert' option only appears for older versions of Excel spreadsheets).
 - File->Save As (Excel workbook *.xlsx) i.e. save under the new file type to do the conversion.

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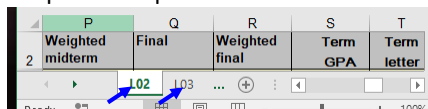
Terminology

- Spreadsheet (referred to as a “workbook” by Microsoft)
 - A Microsoft **Excel file**



- **Worksheet**

- A part of a spreadsheet



MS-Excel tutorial notes by James Tam

Formula References To Other Worksheets

- Example spreadsheet: “references_v1_10%tax”

“Employees” worksheet

	A	B	C	D
1	SIN	Salary	Taxes owed	Net income
2	111111111	\$50,000.00	\$5,000.00	\$45,000.00
3	111111112	\$60,000.00	\$6,000.00	\$54,000.00

“Rates” worksheet

	A	B
1	Tax rate	10%

References to same worksheet

	A	B	C	D
1	SIN	Salary	Taxes owed	Net income
2	111111111	\$50,000.00	\$5,000.00	\$45,000.00

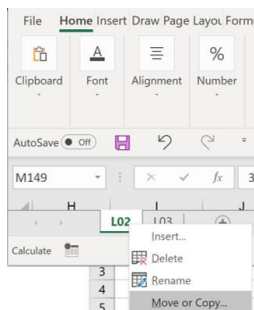
Reference to **another worksheet**

	A	B	C	D
1	SIN	Salary	Taxes owed	Net income
2	111111111	\$50,000.00	\$5,000.00	\$45,000.00

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Copying/Moving A Worksheet

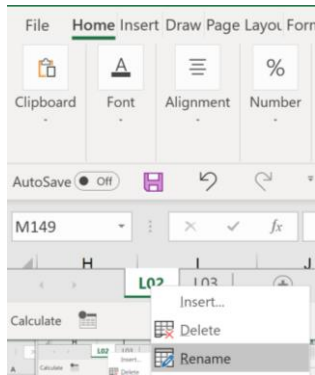
- Sometimes you may wish to duplicate the data and calculations from one worksheet into another e.g. term grade calculation from one lecture to another.
 - Right click on the source worksheet and select ‘Move’ or ‘Copy’



MS-Excel tutorial notes by James Tam

Renaming Worksheets

- Right click on the appropriate worksheet and select the 'Rename' option.



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Miscellaneous Features: Freezing Panes

- Freeze panes

	A	B	C	D	E
1	CPSC 203: fall 2010				
2	Student ID	Faculty	A1	A2	A3
9	117	Humanities	2.3	3.3	3
10	118	Social Sciences	3.3	2.7	3.3
11	119	Management	4.3	1.7	3.3

- Options & method of invoking the option:
 - Freeze top (currently visible) row: View -> Window : Freeze Panes : Freeze Top Row
 - Freeze left (currently visible) column: View -> Window : Freeze Panes : Freeze First Column
 - Freeze any row:
 - Click on the row below the row to be frozen: View -> Window : Freeze Panes : Freeze Panes

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Hiding/Showing Columns

- Sometimes you don't want to delete a column (data needed e.g. student ID) but you want to temporarily obscure one or more columns
- Hide:
 - Select columns to hide, right click and select 'hide' (click at very top of column)
 - (Press control and click on the columns to hide 1+ non-adjacent columns)
- Show:
 - Select the column adjacent (right hand side) to the hidden column and select 'show' (the mouse pointer changes appearance)
 - (Or simply move the mouse to the appropriate location – see above point – and then 'drag' a hidden column into appearance)
- Specific resource for this feature
 - <https://support.office.com/en-us/article/Hide-or-show-rows-or-columns-659c2cad-802e-41e5-b1e1-443579f84435>

MS-Excel tutorial notes by James Tam

Hiding/Showing Rows

- Hiding/showing rows works the same way but select a row or rows by clicking on an adjacent row (below the hidden row or rows)
- Individual cells cannot be hidden

MS-Excel tutorial notes by James Tam

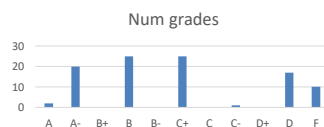
Charting Information In Excel

- In tutorial you learned how to insert a column chart ('grows' vertically).
- Some other types of charts covered in this section include: bar charts and pie charts.
- Also you will learn how to filter chart data.

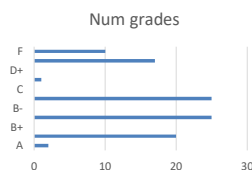
MS-Excel tutorial notes by James Tam

Other Charts: Bar

- **Example spreadsheet:** `example_creating_charts`
- In Excel: a column chart grows vertically while a bar chart grows horizontally.
 - Column chart



- Bar chart



MS-Excel tutorial notes by James Tam

Other Charts: Pie

- **Example spreadsheet:** `example_creating_charts`
- Show proportions rather than exact values

- **Example good usage:** *proportion* of students who were awarded 'A' vs 'A-' grades (i.e. roughly $\frac{1}{4}$ awarded a 'B' grade in the chart to the left)

% Awarded each grade



■ A ■ A- ■ B+ ■ B ■ B- ■ C+ ■ C ■ C- ■ D+ ■ D ■ F

- **Example poor usage:** *exact numbers* of students who were awarded A grades, A- grades etc. (e.g. did 25, 26 or 30 students get a 'B'?)

Num grades



■ A ■ A- ■ B+ ■ B ■ B- ■ C+ ■ C ■ C- ■ D+ ■ D ■ F

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Other Charts: Clustered Column

- **Example spreadsheet:** `clustered_column_chart_filtering_data`
- Used when **multiple categories** of data must be plotted
 - E.g. 1: Number of **births at different hospitals** over the last year.
 - One axis is the months of the year, the other is the number of births. With a 2D chart all dimensions are accounted for.
 - E.g. 1: Rating scores for different questions comparing an **individual vs. department vs. faculty scores**.
 - One axis is for the different questions, one axis is for the actual score.
 - Plotted as a column chart **additional columns** can be used to display scores.

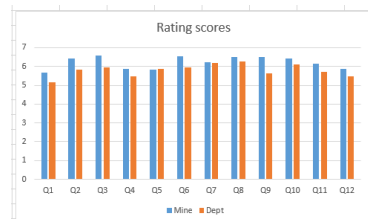


- This type of chart allows comparison between the categories (e.g. **individual vs. department** for each of the **12 questions**).

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Filtering Chart Data

- (The previous example spreadsheet may be used here).
- Under different situations it may be desired to see only a subset of the data.
 - In the previous example suppose that for one type of evaluation the individual was to be judged only vs. other members of the department and not the whole faculty.

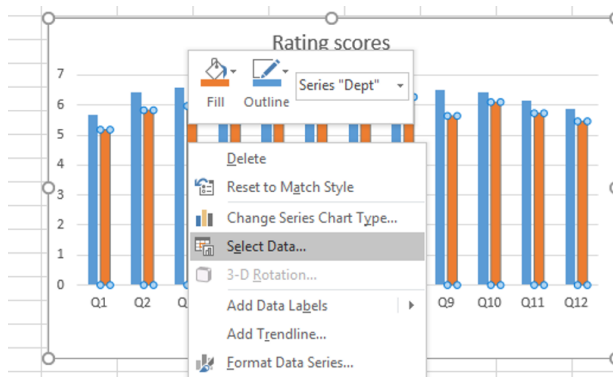


- The filtering temporarily affects what data is charted and can be toggled (turned on/off).

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Filtering Chart Data (2)

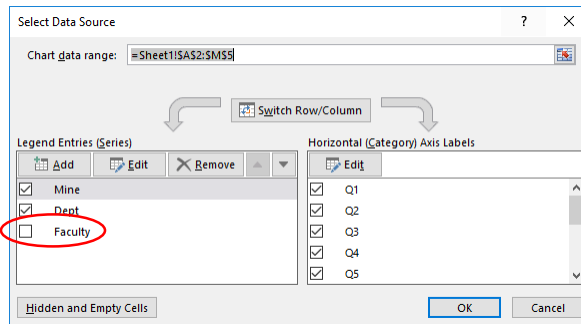
- **Step 1:** Right click on the chart and click on the “Select Data” option



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Filtering Chart Data (3)

- **Step 2:** Check or Uncheck the data that you wish to be charted (in the example below we have unchecked the option to chart **faculty scores**).



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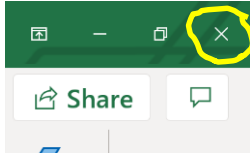
Resources For Useful Excel Charting Features

- Moving and resizing (within and between worksheets):
 - <https://support.office.com/en-us/article/Move-or-resize-a-chart-F9D6087B-1D7B-4A72-8D81-1D0788EA783F>
- Editing titles and data labels:
 - <https://support.office.com/en-us/article/edit-titles-or-data-labels-in-a-chart-248bfe15-02ed-477a-81b6-b14e2c03b87e>
- Adding titles to the axis
 - <https://support.office.com/en-us/article/Add-axis-titles-to-a-chart-5861B8D8-7FC8-441E-87D5-4CD9CD2B46CE>
- Changing data labels
 - <https://support.office.com/en-us/article/Change-the-format-of-data-labels-in-a-chart-EE7525E3-3A58-4142-B0E3-8140A1D6545E>

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Quitting Excel

- Similar to Word
- Click on the close window icon



- Select the close option: File- >Close

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Other Excel Resources

- Online training resources created by Microsoft:
 - Tutorials
 - <https://support.office.com/en-us/article/excel-for-windows-training-9bc05390-e94c-46af-a5b3-d7c22f6990bb>
 - A MAC specific resource
 - <https://support.office.com/en-us/article/excel-2016-for-mac-help-2010f16b-aec0-4da7-b381-9cc1b9b47745>

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