

Excel advanced

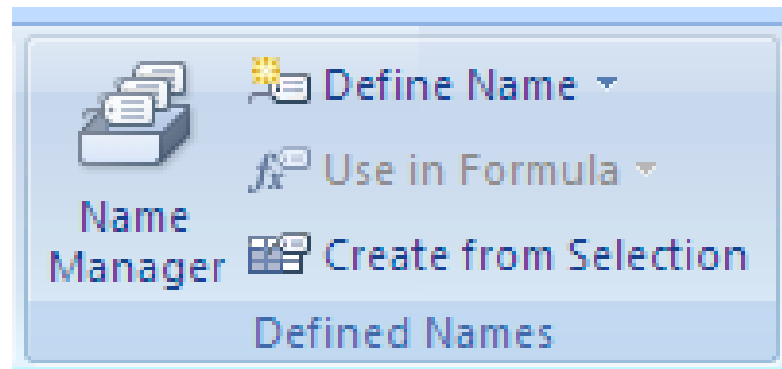
Medical school 18/19

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4.1 Editing

4.1.1.1 Naming a Cell or Range

- You can define a Name for a cell or range to make it easier to reference it in functions etc.
- You control Names from the **Defined Names** group on the **Formulas** tab:



Excel: Naming a Cell or Range

- To name the range for the January expenses you would:
 1. Select the cells you want to name.
 2. Click on **Define Name**
 3. Enter the name

	A	B	C	D	E	F	G	H	I
1	Expenses								
2	Category Name	Jan	Feb	Mar					
3	Interest Exp	\$2,183	\$2,040	\$1,717					
4	Wages	\$2,140	\$2,140	\$2,140					
5	Postage / Delivery	\$2,568	\$2,400	\$2,020					
6	Rent	\$2,568	\$2,400	\$2,020					
7	Office	\$3,852	\$3,600	\$3,030					
8	Insurance	\$3,852	\$3,600	\$3,030					
9	Printing / Reproduction	\$6,375	\$6,000	\$5,050					

Name:	JanuaryExpenses
Scope:	Workbook
Comment:	
Refers to:	=Sheet1!\$B\$3:\$B\$9
<input type="button" value="OK"/> <input type="button" value="Cancel"/>	

Excel: Naming a Cell or Range

- Once you have given a cell or range a name you can access the name in the dropdown from the Names section on the Formula bar



- Clicking on A2 ge

The screenshot shows an Excel spreadsheet with a named range 'JanuaryExpenses' defined for the range A2:D5. The formula bar shows 'Category Name' selected. The spreadsheet data is as follows:

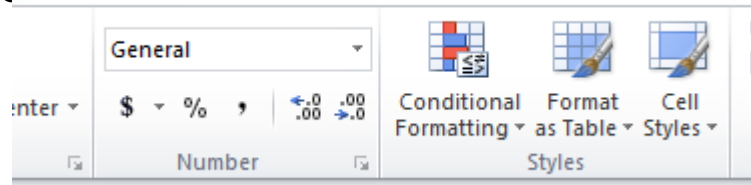
	Expenses			
2	Category Name	Jan	Feb	Mar
3	Interest Exp	\$2,183	\$2,040	\$1,717
4	Wages	\$2,140	\$2,140	\$2,140
5	Postage / Delivery	\$2,568	\$2,400	\$2,020

4.1.1.4 Conditional Formatting

- **Conditional formatting:** uses a logical test to apply one format for a cell when the test is true and a different format when it is false.
 - For example, you could format positive amounts with a green cell fill and negative amounts with a red fill.

Conditional Formatting

- You may wish to use conditional formatting at some point during your research.
- Conditional formatting can be found under the home tab, styles tab.



- You can use conditional highlighting to draw attention to specific cells.
- Select the data you are interested in, then click on conditional formatting, next select the highlighting criteria that fits your needs.

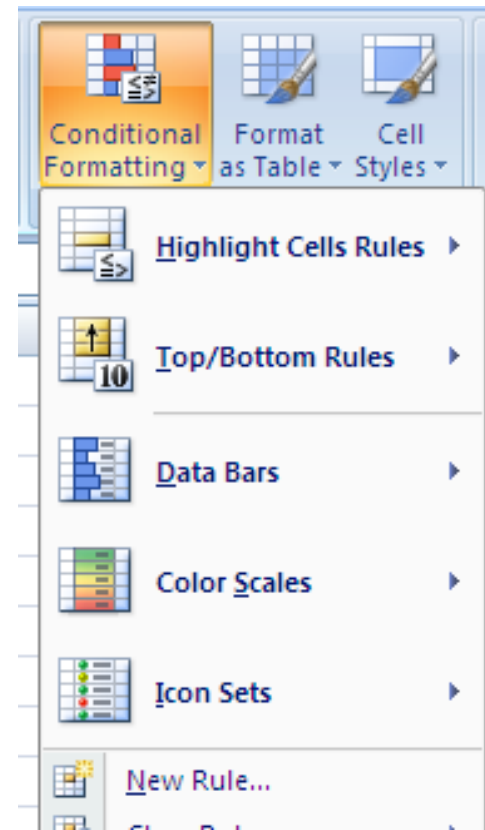
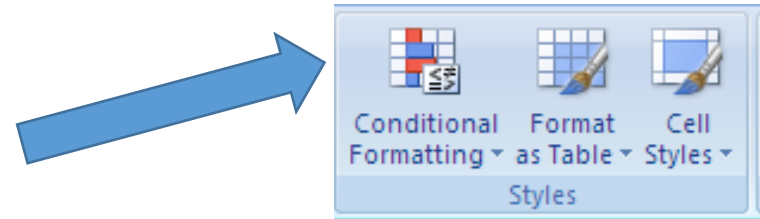
Excel: Conditional Formatting

- If I want to automatically put a red fill in all cells for students who are failing my first period class.
- First step is to select the cells containing the grades

	A	B	C
1	Student Name	Grade	%
2	Student 1	F	45.53%
3	Student 2	A	92.24%
4	Student 3	F	29.74%
5	Student 4	B	85.68%
6	Student 5	D	64.32%
7	Student 6	B	80.66%
8	Student 7	A	97.45%
9	Student 8	A	91.07%
10	Student 9	B	88.50%
11	Student 10	B	81.41%
12	Student 11	C	76.73%
13	Student 12	A	96.23%
14	Student 13	A	103.50%
15	Student 14	C	75.18%
16	Student 15	F	31.30%
17	Student 16	C	69.98%
18	Student 17	B	85.77%
19	Student 18	C	78.23%
20	Student 19	F	58.58%
21	Student 20	B	79.93%

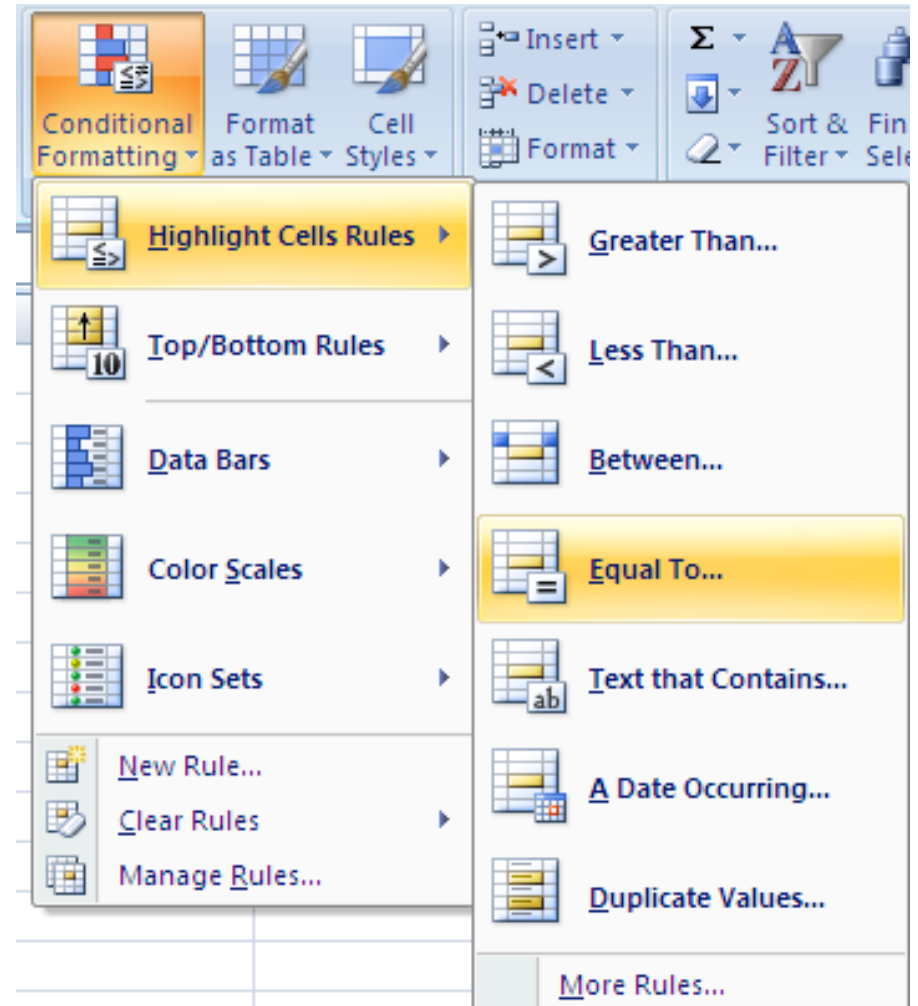
Excel: Conditional Formatting

- In the **Style** group on the **Home** tab click **Conditional Formatting**
- This brings up the conditional formatting menu:



Excel: Conditional Formatting

- In this case we want to highlight the cells with a certain value.
 - Choose **Highlight Cells Rules**
 - Choose **Equal to**



Excel: Conditional Formatting

	A	B	C	D	E	F	G
1	Student Name	Grade	%				
2	Student 1	F	4				
3	Student 2	A	9				
4	Student 3	F	2				
5	Student 4	B	8				
6	Student 5	D	6				
7	Student 6	B	8				
8	Student 7	A	97.45%				
9	Student 8	F	36.31%				
10	Student 9	B	88.50%				

Equal To

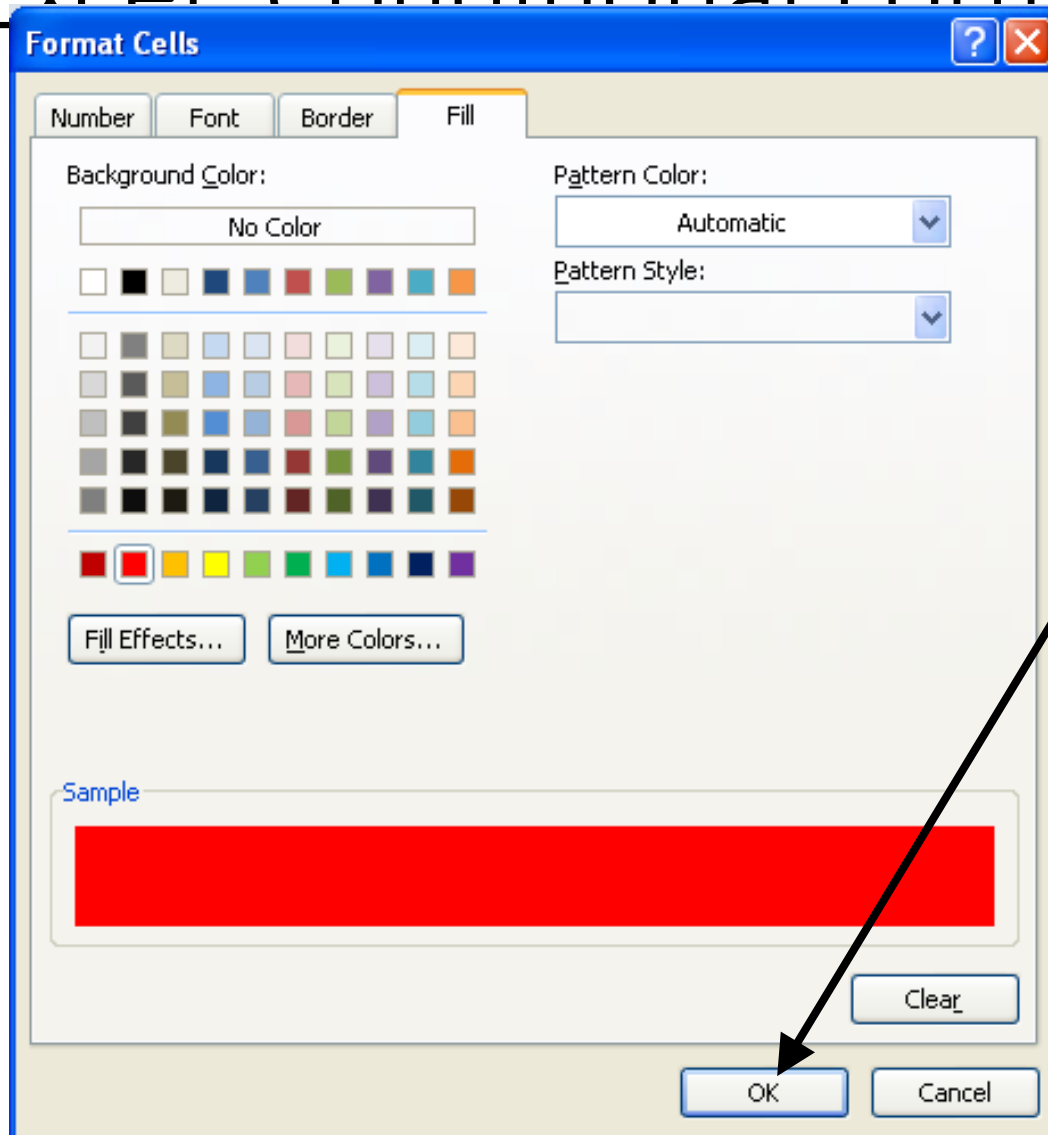
Format cells that are EQUAL TO:

F with Light Red Fill with Dark Red Text

- Light Red Fill with Dark Red Text
- Yellow Fill with Dark Yellow Text
- Green Fill with Dark Green Text
- Light Red Fill
- Red Text
- Red Border
- Custom Format...

- Once a value (F) is entered for Format cells that are EQUAL TO: the formatting is applied.
- There are a number of build in format, or create a custom format.
- I want a bright red background

Excel: Conditional Formatting



- Formatting Dialog box pops up
- Click on *Fill*
- Choose Red
- Click OK

Excel: Conditional Formatting

	A	B	C	D	E	F
1	Student Name	Grade	%			
2	Student 1	F	45.53%			
3	Student 2	A	92.24%			
4	Student 3	F	29.74%			
5	Student 4	B	85.68%			
6	Student 5	D	64.32%			
7	Student 6	B	80.66%			
8	Student 7	A	97.45%			
9	Student 8	F	36.31%			
10	Student 9	B	88.50%			

Equal To

Format cells that are EQUAL TO:

F | with Custom Format...

OK

	A	B	C
1	Student Name	Grade	%
2	Student 1	F	45.53%
3	Student 2	A	92.24%
4	Student 3	F	29.74%
5	Student 4	B	85.68%
6	Student 5	D	64.32%
7	Student 6	B	80.66%
8	Student 7	A	97.45%
9	Student 8	A	91.07%
10	Student 9	B	88.50%
11	Student 10	B	81.41%
12	Student 11	C	76.73%
13	Student 12	A	96.23%
14	Student 13	A	103.50%
15	Student 14	C	75.18%
16	Student 15	F	31.30%
17	Student 16	C	69.98%
18	Student 17	B	85.77%
19	Student 18	C	78.23%
20	Student 19	F	58.58%
21	Student 20	B	79.93%

- Click OK
- All Fs will now be red

Excel: Conditional Formatting

- You can add other formatting conditions.
- I can shade all As green putting in second condition using the same steps.
- The file now looks like this



	A	B	C
1	Student Name	Grade	%
2	Student 1	F	45.53%
3	Student 2	A	92.24%
4	Student 3	F	29.74%
5	Student 4	B	85.68%
6	Student 5	D	64.32%
7	Student 6	B	80.66%
8	Student 7	A	97.45%
9	Student 8	A	91.07%
10	Student 9	B	88.50%
11	Student 10	B	81.41%
12	Student 11	C	76.73%
13	Student 12	A	96.23%
14	Student 13	A	103.50%
15	Student 14	C	75.18%
16	Student 15	F	31.30%
17	Student 16	C	69.98%
18	Student 17	B	85.77%
19	Student 18	C	78.23%
20	Student 19	F	58.58%
21	Student 20	B	79.93%

Cell protection

- If u want a formula to never change click format, cells, protection tab and tick lock
- Freezing panes. Click the cell after u want the split and click window freeze frame
- move sheets by click and drag
- Save file as a webpage .html

Comments

- Right click on the cell & select Insert comment.
- You may edit or delete the comment by right clicking on the cell & selecting your choice.

Y	790,343	695,034	263,448
Y	1,934,349	1,700,000	483,587
Y	2,103,049		420,610
N	1,785,323		357,065

Tanya Goette:
This store looks
really great!

Hide columns

Data handling

1. Sorting
2. Querying and filtering

Functions

Cleaning up your data

- Not all data is in ready to analyze condition when you get it—the next few slides will present a few ways to clean up your data
 - Functions for text
 - Using “If” statements
 - Concatenate

Some functions

- TODAY – OGGI
- GIORNO, MESE, ANNO
- SUMIF - SOMMA.SE
- ROUND
- CONTA, CONTA.VALORI ...
- UPPER – MAIUSC ...
- CONCATENATE

Using “If” Statements

- We can use “if” statements to further clean up this data set.
- The syntax of the “if” statement is
 - If([logical test], [value if TRUE], [value if FALSE])
- Logical Test—This is the test you want excel to use to determine the output (use cell references). An example would be “B4=25”
- Value if True—This is the output value that excel will place in the cell if the logical test is true
- Value if False—This is the output value that excel will place in the cell if the logical test is not true.

Recoding Using If

- To recode using If, insert two new columns between the commodity codes and data
- Next, use your reference cells from above to make your if statements
 - Remember to use absolute cell references (\$G\$3)
- Click and drag down your formula
- You can have multiple if statements in one line. Separate these by a comma.
 - =IF(B11=0,\$G\$3,IF(B11=100,\$G\$4, IF(B11=200, \$G\$5, IF(B11=300, \$G\$6, 0))))

Exercise 9

- Recode the data for commodities using the if statement

fx		Alignment		Number		Style		Color			
B	C	D	E	F	G	H	I	J	K	L	M
ex - Average Price Data											
				2001 to 2011							
				0000	US			704111	Bacon	per	1lb
				0100	NE			711211	Bananas	per	lb
				0200	MW						
				0300	S						
								Jan	Feb		
								2001	2001		
11	US			Bacon				2.994	3.065		
11	US			Bananas				0.500	0.496		
11	NE			Bacon				3.059	3.222		
11	NE			Bananas				0.557	0.556		
11	MW			Bacon				3.119	3.156		
11	MW			Bananas				0.476	0.459		
11	S			Bacon				2.759	2.861		
11	S			Bananas				0.458	0.460		

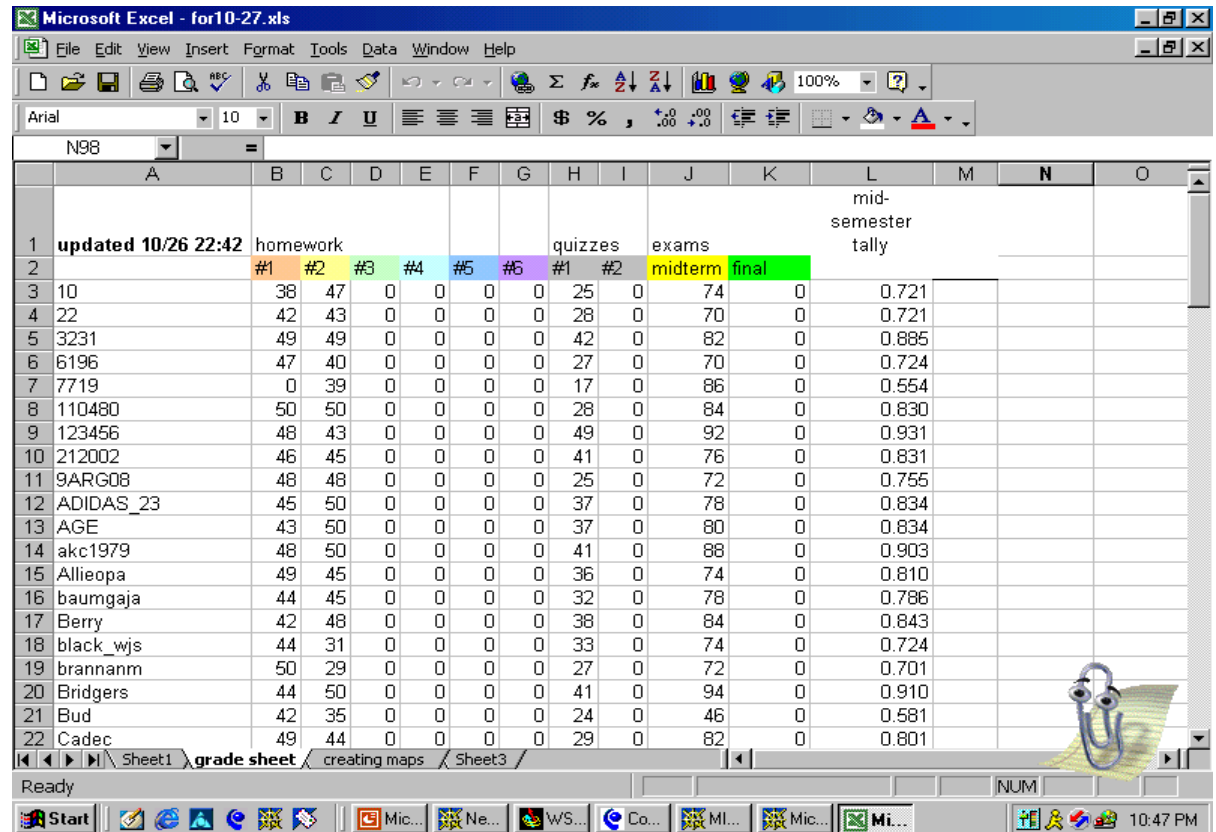
Combining Cells--Concatenate

- After recoding cells you can recombine them using Concatenate
- First make a new column between the commodity name and the data.
- Next, use the formula concatenate
 - Syntax “=concatonate(cell 1, cell

	C	D
US	Bacon	USBacon
US	Bananas	USBananas
NE	Bacon	NEBacon
NE	Bananas	NEBananas
MW	Bacon	MWBacon
MW	Bananas	MWBananas
S	Bacon	SBacon
S	Bananas	SBananas

Some Useful Functions

- IF
- TIME functions



The screenshot shows a Microsoft Excel spreadsheet titled "for10-27.xls". The spreadsheet contains a table with the following data:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	updated 10/26 22:42	homework				quizzes				exams		mid-semester tally			
2		#1	#2	#3	#4	#5	#6	#1	#2	midterm	final				
3	10	38	47	0	0	0	0	25	0	74	0	0.721			
4	22	42	43	0	0	0	0	28	0	70	0	0.721			
5	3231	49	49	0	0	0	0	42	0	82	0	0.885			
6	6196	47	40	0	0	0	0	27	0	70	0	0.724			
7	7719	0	39	0	0	0	0	17	0	86	0	0.554			
8	110480	50	50	0	0	0	0	28	0	84	0	0.830			
9	123456	48	43	0	0	0	0	49	0	92	0	0.931			
10	212002	46	45	0	0	0	0	41	0	76	0	0.831			
11	9ARG08	48	48	0	0	0	0	25	0	72	0	0.755			
12	ADIDAS_23	45	50	0	0	0	0	37	0	78	0	0.834			
13	AGE	43	50	0	0	0	0	37	0	80	0	0.834			
14	akc1979	48	50	0	0	0	0	41	0	88	0	0.903			
15	Allieopa	49	45	0	0	0	0	36	0	74	0	0.810			
16	baumgaja	44	45	0	0	0	0	32	0	78	0	0.786			
17	Berry	42	48	0	0	0	0	38	0	84	0	0.843			
18	black_wjs	44	31	0	0	0	0	33	0	74	0	0.724			
19	brannanm	50	29	0	0	0	0	27	0	72	0	0.701			
20	Bridgers	44	50	0	0	0	0	41	0	94	0	0.910			
21	Bud	42	35	0	0	0	0	24	0	46	0	0.581			
22	Cadec	49	44	0	0	0	0	29	0	82	0	0.801			

Conditional Functions

- Conditional functions allow the software to perform conditional tests and evaluate a condition in your worksheet. Depending on whether the condition is true or false, different values will be returned to the cells.
- =IF is the most important conditional function

If

=IF(condition, action if true, action if false)

This tests the “condition” to determine if specific results or cell contents are true or false.

If the result of the test is true, the “action if true” is executed. If the result is false, the “action if false” portion contains another set of instructions to execute.

The instructions to be executed can return cell contents that are labels as well as values.

If statements

- `If(a4>17, 'allowed to vote', 'not allowed to vote')`
- First comma then allowed to vote yes into this cell, otherwise 'not .. Goes into this cell
- Click function button and click if the type in formula e.g `c7=b7` false
- If true "correct". If false "incorrect"

Excel: Logical Operators

Logical Operator	Meaning	Example
=	Equal to	<code>=IF(E8=C8,"Equal","Not equal")</code> When the two cells are equal, the word "Equal" is shown. When the two cells are not equal, the phrase "Not equal" shows.
<	Less than	<code>=IF(F4<E4,E4-F4, F4-E4)</code> If F4 is less than E4, subtract F4 from E4. Otherwise do the subtraction the other way. This makes sure you have a positive number for the difference of the two numbers.
>	Greater then	<code>=IF(C6>100,C6,100)</code> If C6 is greater than 100, show C6. Otherwise show 100.

Excel: Logical Operators

Logical Operator	Meaning	Example
\leq	Less than or equal to	<code>=IF(B5<=10,B5,"Maximum")</code> If B5 is less than or equal to 10, show B5. Otherwise show the word "Maximum".
\geq	Greater than or equal to	<code>=IF(MAX(B4:E8)>=SUM(B4:E8)/2,MAX(B4:E8),SUM(B4:E8)/2)</code> If the largest value in the range is larger than or equal to half of the sum of the range, then show the largest value. Otherwise show half the sum of the range.
\neq	Not equal to	<code>=IF(B8<>D6,IF(B8<10,10,B8),D6)</code> If B8 is not equal to D6, check to see if B8 is less than 10. Show 10 if it is and B8 if it isn't. Otherwise show D6, which would be equal to B8 in this case.

Logical Functions

And(logical1, logical2) Returns true if each condition is true

Or(logical1, logical2) Returns true if either condition is true

Not(logical) Returns true if the condition is false

True() Always returns true

False() Always returns false

Examples

- =IF(A5>20, B5, 0) means that if the value in A5 is greater than 20, use the value in B5. Otherwise assign the number 0.
- =IF(AND(B11<>0,G11=1),10,0) means that if the value in B11 is not equal to 0 and the value in G11 is equal to 1, assign the number 10. Otherwise, assign the number 0.
- =IF(OR(E13="Profit",F15>G15),"Surplus","Deficit") means that if either E13 contains the word "Profit" or the contents of F15 are greater than or equal to the contents of G15, assign the label "Surplus". Otherwise, assign the label "Deficit".

Excel: Nesting Statements

- You can nest up to 7 If statements to create complex tests. For example, to calculate your letter grade based on your percent score I use the following statement:

```
=IF(F4>0.895,"A",IF(F4>0.795,"B",IF(F4>0.695,"C",IF(F4>0.595,"D","F"))))
```

VLOOKUP Function – CERCA.VERT

- Searches for a value in the leftmost column of a table, and then returns a value in the same row from a column you specify in the table.

Syntax:

VLOOKUP(lookup_value, table_array, col_index_num, [range_lookup])

lookup_value

VLOOKUP(**lookup_value**, table_array, col_index_num, [range_lookup])

- **lookup_value** - the value to search for.

This can be either a value (number, date or text) or a cell reference (reference to a cell containing a lookup value), or the value returned by some other Excel function. For example:

- Look up for number: =VLOOKUP(40, A2:B15, 2) - the formula will search for the number 40.
- Look up for text: =VLOOKUP("apples", A2:B15, 2) - the formula will search for the text "apples".
- Look up for value in another cell: =VLOOKUP(C2, A2:B15, 2) - the formula will search for the value in cell C2.

table_array

- VLOOKUP(lookup_value, table_array, col_index_num, [range_lookup])
- table_array - two or more columns of data.
- Remember, the VLOOKUP function always searches for the lookup value in the first column of table_array. Your table_array may contain various values such as text, dates, numbers, or logical values. Values are case-insensitive, meaning that uppercase and lowercase text are treated as identical.
 - So, our formula =VLOOKUP(40, A2:B15,2) will search for "40" in cells A2 to A15 because A is the first column of the table_array A2:B15.

col_index_num

- **col_index_num** - the column number in table_array from which the value in the corresponding row should be returned.
 - The left-most column in the specified table_array is 1, the second column is 2, the third column is 3, and so on.
 - Well, now you can read the entire formula =VLOOKUP(40, A2:B15,2). The formula searches for "40" in cells A2 through A15 and returns a matching value from column B (because B is the 2nd column in the specified table_array A2:B15).

- `range_lookup` - determines whether you are looking for an exact match (`FALSE`) or approximate match (`TRUE` or omitted). This final parameter is optional but very important.

Example

The image shows an Excel spreadsheet with a table of animal speeds. The formula bar at the top shows `=VLOOKUP(40,A2:B15,2)`. The result of the formula, 'Ostrich', is displayed in cell D2. A callout box explains the formula's components: 'Find value 40' points to the first argument, 'Search in A2:A15 (1st column of table_array)' points to the second argument, and 'Return a matching value from column B' points to the third argument.

	A	B	C	D	E	F	G	H
1	Speed (mph)	Animal						
2	30	Cat		Ostrich				
3	32	Reindeer						
4	35	Rabbit						
5	35.5	Whippet						
6	39.35	Greyhound						
7	40	Ostrich						
8	42	Gray fox						
9	43	Coyote						
10	45	Elk						
11	50	Lion						
12	61	Antelope						
13	70	Cheetah						
14	200	Peregrine falcon						

`=VLOOKUP(40,A2:B15,2)`

- Find value 40
- Search in A2:A15 (1st column of table_array)
- Return a matching value from column B

Example

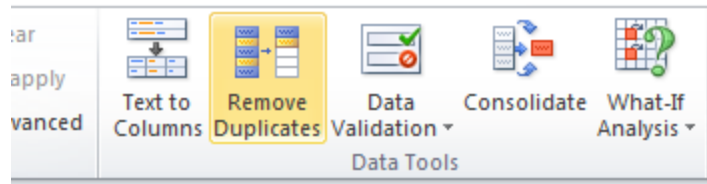
- Use HLOOKUP instead of VLOOKUP when your comparison values are located in a row which is the top of a table containing the data

Goal seek

- See notes

Goal Seek

- You can use excel to find the answer to specific questions. You can do this by using the goal seek function.
- Goal seek is located under the data tab, in the “What-if-Analysis”



- You could use a goal seek to determine how long it would take to save \$25,000 with a 2% annual interest rate making monthly deposits of \$500.00.

T- test

- See notes