Excel Logic & the IF Function
or
Let's make a decision!

- Comparison Operators
  - Compare two values and produce either **true** or **false**
    - =2*3=4+2
    - =A1>0
    - =average(a1:a10)>60
- Must include at least one comparison operator.

>	>=	=
<	<=	<>

Built-in IF Function

- The **IF** function allows our spreadsheet to ***make a decision*** when analyzing the data.
- The function asks the question: Is some condition **true** or **false**?
- Perform a different action for **true** or **false**.
- Our task: choose the correct conditions to check

IF Function Syntax

=IF(condition, action_if_true, action_if_false)

Example:

=IF(speed>55, ”TICKET”, ”SAFE”)

=IF(average(A1:D1) >= 60, “PASS”, “FAIL”)

Problem 5.1

- Bank account statement where a W implies an amount of money withdrawn and a D is a deposit.

	A	B	C	D	E
1	Initial Balance	$3,874.00			
2					
3	**Date**	**Amount**	**Type**	**Balance**	**Over $50?**
4	1/12/2012	$34.50	W		
5	2/12/2012	$100.00	D		
6	2/29/2012	$20.00	W		

- Write the formula needed in E4 to E6 to display Yes or No
- Write the formula for column D

Logical Operators

- Logical OR

  OR(condition#1, condition#2)

- A value of TRUE is returned if EITHER of the logical tests returns a value of TRUE; otherwise, a value of FALSE is returned

  =IF(OR(temperature > 90, weather = "RAIN") ,"Yuck", "Pleasant")

- Note: You can have more than two logical tests

Logical Operators

- Logical AND
  - AND(condition#1, condition#2)

- A value of TRUE is returned if BOTH of the logical tests returns a value of TRUE; otherwise, a value of FALSE is returned

=IF(AND(temperature > 90, weather = "RAIN") , "Awful", "could be worse")

If/And/Or

- What decision do you need to make?
- What data will you base your decision on?
- How can you write the decision as a condition?
- What actions will you take?

Problem 5.2

http://zeus.cs.pacificu.edu/chadd/cs130s12/Problem52.html

Inspect the data!

	A	B	C	D	E
1	Name	District	Sales	Emp. Yrs	Job Level
2	Linda	East	$20,000.00	2	
3	Joe	West	$42,302.00	9	
4	Bill	East	$53,001.00	3	
5	Mary	South	$12,000.00	12	
6	Mark	South	$ 2,050.00	6	
7	John	North	$9,000.00	0	
8	Ted	East	$40,000.00	4	

Write a formula in column E that will assign a job level based on two different criteria:

Salespeople who have been employed for more than 5 years AND have annual sales of more than $10,000 should be assigned a job level code of 2. All others should have a job level code of 1.

Problem 5.2 continued

- Add a Bonus column to the right of the table
  - An employee gets a 10% bonus if they have either worked for more than 5 years or done more than $7,000 in sales
  - Otherwise they get a 1% bonus

Problem 5.2.1 Soccer Scores

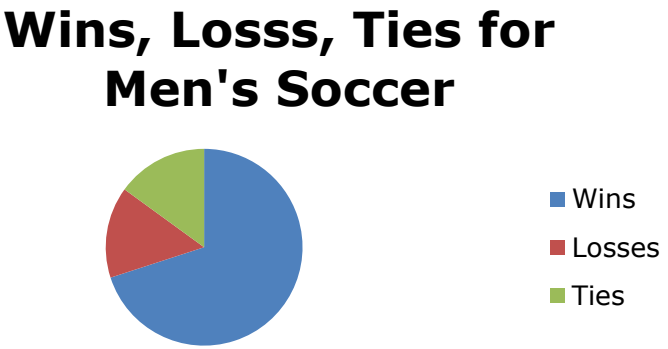
zeus.cs.pacificu.edu/chadd/cs130s12/SoccerScores.html

Use an If() to fill in this column!

Calculate these columns!

Opponent	Pacific's Score	Opponent's Score	Win/Loss/Tie	Wins	Losses	Ties
Warner Pacific	4	3	Win	1	0	0
Trinity Lutheran	3	1	Win	2	0	0
Walla Walla	5	0	Win	3	0	0
Cal Lutheran	2	1	Win	4	0	0
UC Santa Cruz	0	0	Tie	4	0	1
Whitworth	2	1	Win	5	0	1
Whitman	4	0	Win	6	0	1
Linfield	1	0	Win	7	0	1
Willamette	2	1	Win	8	0	1
Puget Sound	0	0	Tie	8	0	2
Pacific Lutheran	0	1	Loss	8	1	2

5.2.1 Pie Chart



- Let's build a Pie Chart of the final Wins/Losses/Ties
- Series Values are the numeric values
  - Bottom of the chart
- Horizontal (Category) Axis Labels are the Labels Wins, Losses, Ties

Problem 5.3

http://zeus.cs.pacificu.edu/chadd/cs130s12/Problem53.html

- Output the rate of commission that a salesperson receives based on the amount of sales they have generated for that month. Commissions are based on the following:

- From $1 to $10 earns 10% commission
- From $10.01 to $100 earns 15% commission
- Anything over $100 earns 20% commission

Problem 5.3 Continued

Use an If() to fill in this column!

Calculate this column!

	A	B	C
1	Amount of Sales	Commission Rate	Amount of Commission
2	$15.00	15.00%	$2.25
3	$253.00	20.00%	$50.60
4	$10.00	10.00%	$1.00
5	$84.00	15.00%	$12.60
6	$12.00	15.00%	$1.80
7	$5.00	10.00%	$0.50
8	$32.00	15.00%	$4.80
9	$56.00	15.00%	$8.40
10	$150.00	20.00%	$30.00
11	$120.00	20.00%	$24.00

http://zeus.cs.pacificu.edu/chadd/cs130s12/Problem54.html

Problem 5.4

Use an If() to fill in this column!

Calculate this column!

	A	B	C
1	Amount of Sales	Commission Rate	Amount of Commission
2	$15.00	15.00%	$2.25
3	$253.00	20.00%	$50.60
4	$10.00	10.00%	$1.00
5	$84.00	15.00%	$12.60
6			
7	**Minimum**	**Maximum**	**Commission**
8	**$1.00**	$10.00	10%
9	**$10.01**	$100.00	15%
10	**$100.01**	-	20%

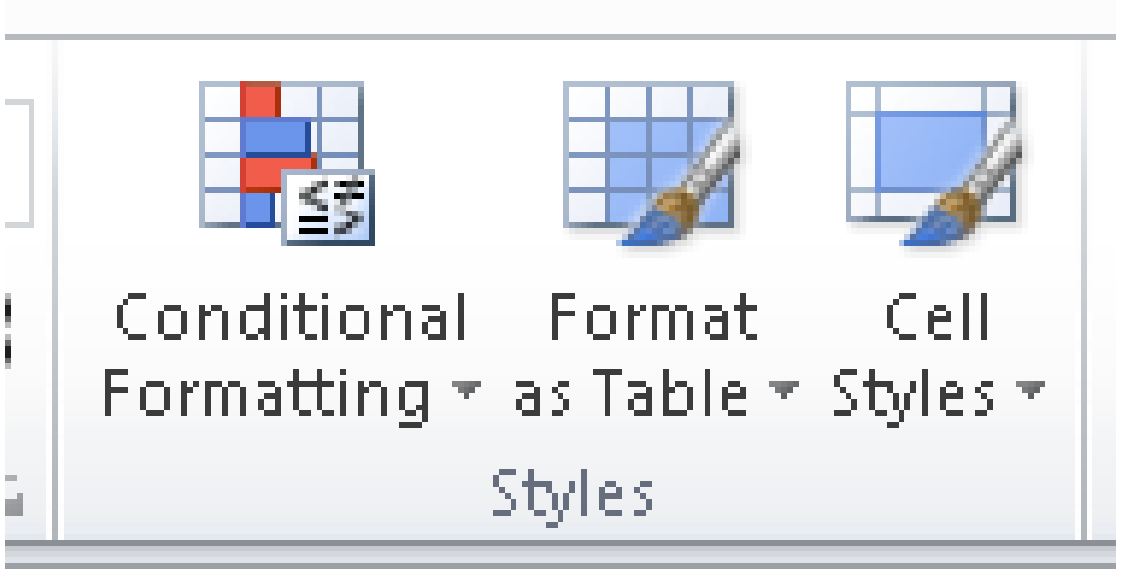
Use the table below to set the rates.

More on importing from the Web

- Right click the area of the spreadsheet imported from the web
  - Refresh: pulls the data down from the same web page again. If the web page changed, this will change the data in your spreadsheet
  - Edit Query: change the webpage that provides the data to the spreadsheet.
  - Data Range Properties: Enable auto-refresh, control auto-formatting, etc.

Conditional Formatting

Format the Cell based on the data the cell contains.



Grades

http://zeus.cs.pacificu.edu/chadd/cs130s12/Problem55.pdf

- Copy and paste the top table into Excel.
- Did the table copy and paste correctly?

- Copy and paste the bottom table into Excel.
- Did the table copy and paste correctly?

Grades

- Add two additional columns as follows:
  - Average is a person's total points divided by the max points possible
  - Letter Grade shows the student's letter grade in the course

    90-100 A, 80-90 B, 70-80 C, 60-70 D, 0-60 F.

Grades

- Create a Pie Chart that shows the percentage of A's, B's, etc.
- You will need to add cells calculating the number of A’s, number of B’s, etc. Hint: you will need to use the COUNTIF function.
- You can look up how it works in Excel help