Introduction to Social Data Analytics

Class 2

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Today's Learning Objectives

From Exercise 1:

- Open Excel, save workbook, edit cells, autofill down column, apply filter, sort columns

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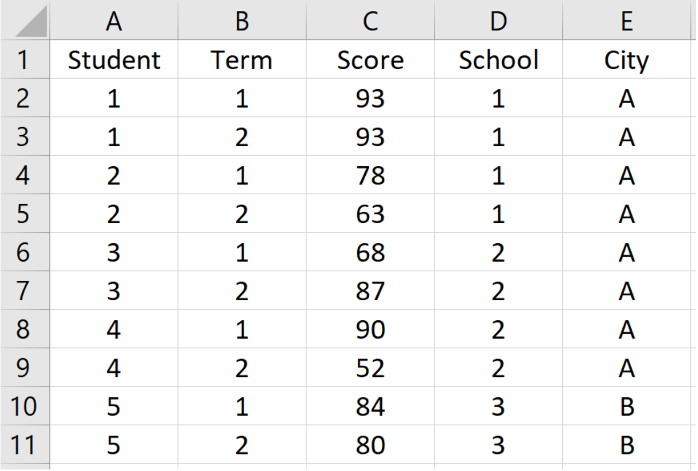
Please download and open class2.xlsx if you haven't already.

Observations $*$ Variables = Data Table



	A	B	C	D	E
1	Student	Term	Score	School	City
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11	5	2	80	3	B

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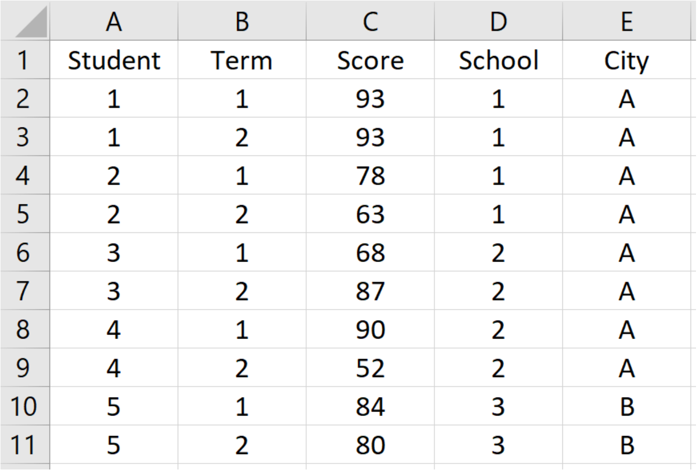

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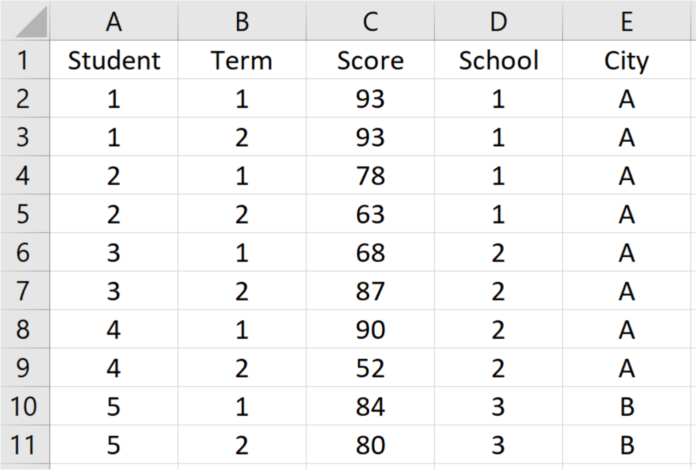

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- What does each column represent?
- What does each row represent?

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- The “case” of the data set, each row
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  - Longitudinal or panel data: observe the same sample over different points in time
- What is the unit of analysis in class2.xlsx?

Changing the unit of analysis

A research project might examine many data tables with different units of analysis, for example:

1. A data table with each student-term (most granular)
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3. A data table with each school
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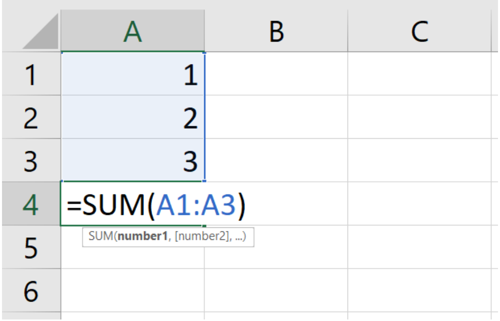
- We'll do this in our Excel table after we learn about functions.

What is a function?



	A	B	C
1	1		
2	2		
3	3		
4	=SUM(A1:A3)		
5			
6			

SUM(**number1**, [number2], ...)

- An object that takes inputs and produces outputs

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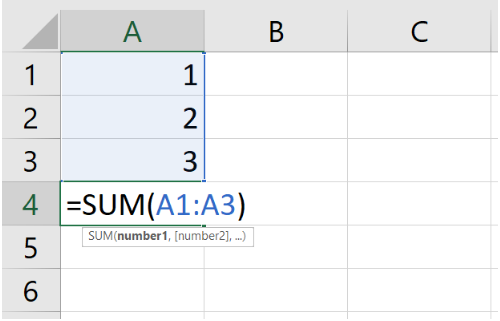

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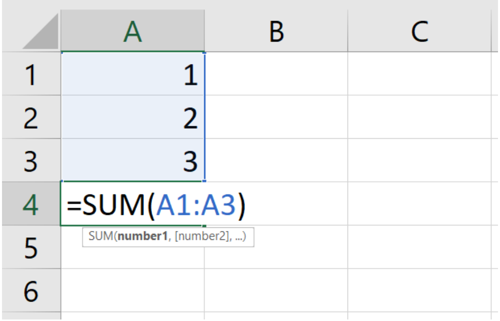

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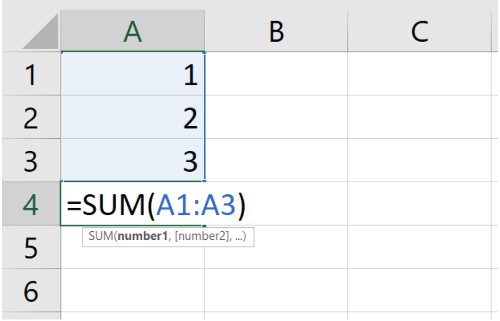

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SUM(**number1**, [number2], ...)

- An object that takes inputs and produces outputs
- What are the inputs in this example?
- What will the output be?
- Notice the equals sign and the text underneath the function.

Types of functions

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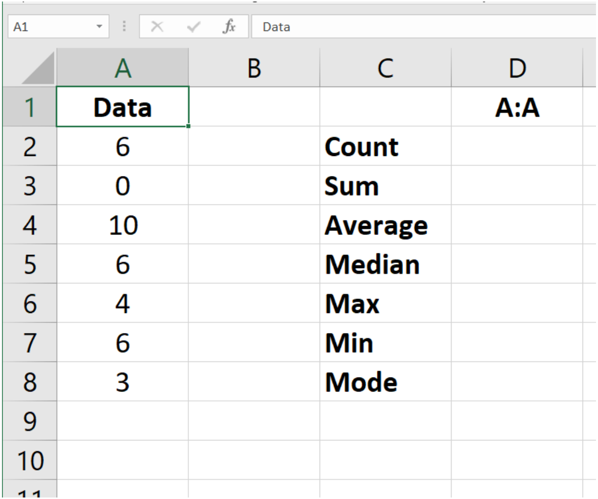
- Lookup:
  - We'll learn about these in our next short exercise.

Statistical Functions in Excel

- COUNT
- SUM
- AVERAGE
- MEDIAN
- MAX, MIN
- MODE

Statistical Functions in Excel

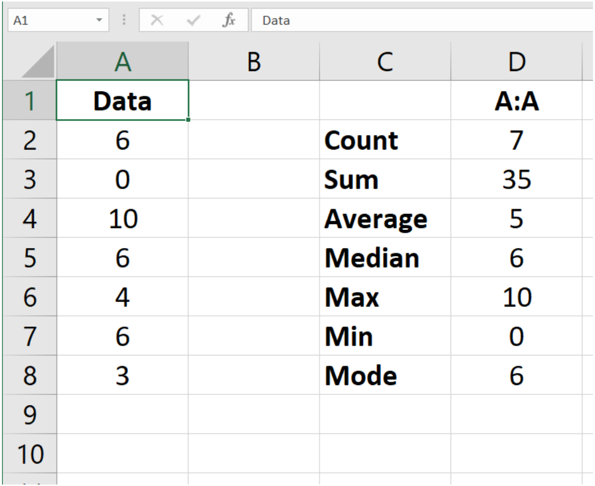


A1

fx Data

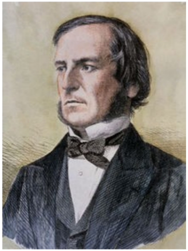
	A	B	C	D
1	**Data**			**A:A**
2	6		**Count**	
3	0		**Sum**	
4	10		**Average**	
5	6		**Median**	
6	4		**Max**	
7	6		**Min**	
8	3		**Mode**	
9				
10				
11				

Statistical Functions in Excel



	A	B	C	D
1	Data			A:A
2	6		Count	7
3	0		Sum	35
4	10		Average	5
5	6		Median	6
6	4		Max	10
7	6		Min	0
8	3		Mode	6
9				
10				

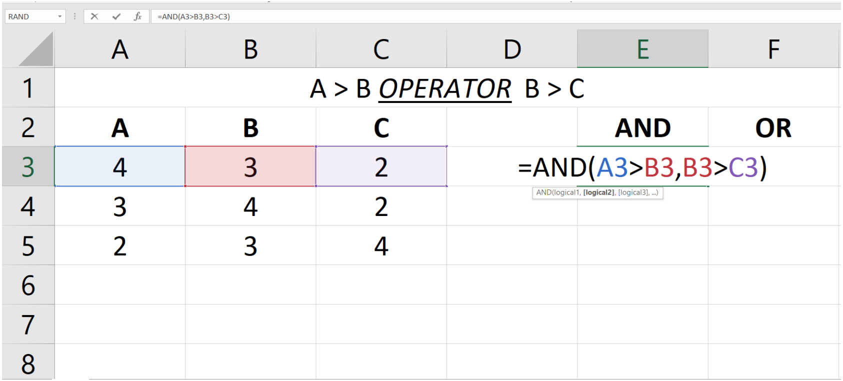
Boolean Logic



George Boole
November 2, 1815 - December 8, 1864

- A statement can be TRUE or FALSE
- Use these to form other statements using:
  - AND
  - OR
  - NOT

Boolean Logic in Excel

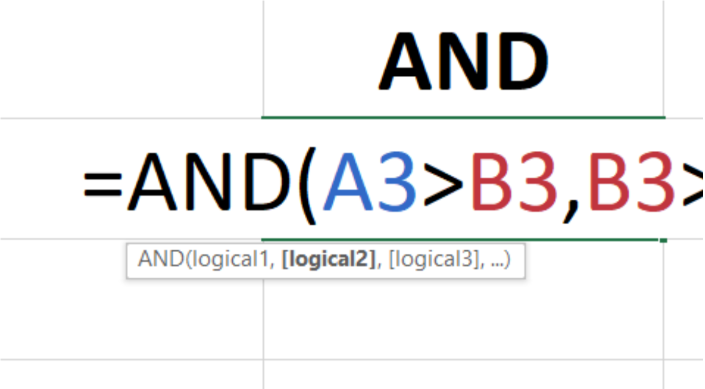


RAND =AND(A3>B3,B3>C3)

	A	B	C	D	E	F
1	A > B *OPERATOR* B > C					
2	**A**	**B**	**C**		**AND**	**OR**
3	4	3	2		=AND(A3>B3,B3>C3)	
4	3	4	2			
5	2	3	4			
6						
7						
8						

AND(logical1, **[logical2]**, [logical3], ...)

Notice the arguments listed underneath the function

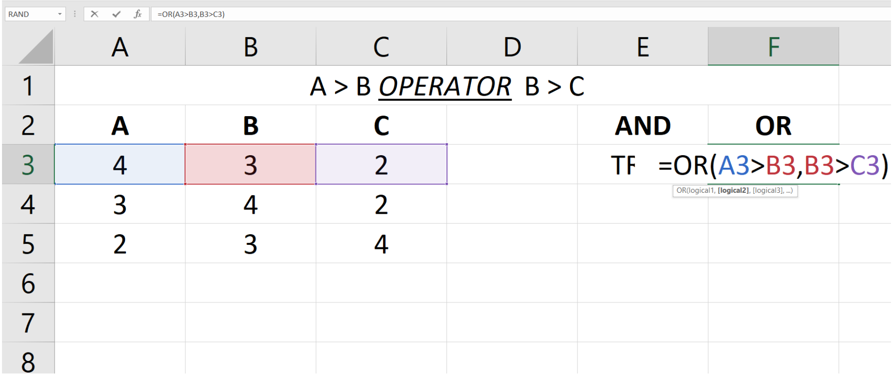


AND

=AND(A3>B3,B3>

AND(logical1, **[logical2]**, [logical3], ...)

Boolean Logic in Excel



RAND

=OR(A3>B3,B3>C3)

	A	B	C	D	E	F
1			A > B *OPERATOR* B > C			
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OR(logical1, **[logical2]**, [logical3], ...)

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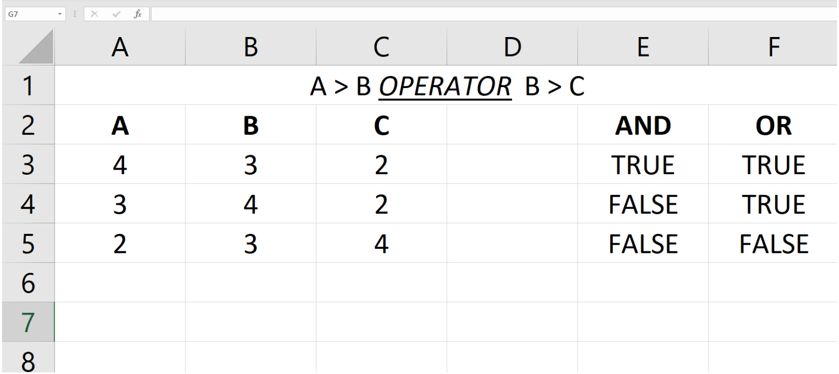

	A	B	C	D	E	F
1	A > B *OPERATOR* B > C					
2	**A**	**B**	**C**		**AND**	**OR**
3	4	3	2		TRUE	TRUE
4	3	4	2		FALSE	TRUE
5	2	3	4		FALSE	FALSE
6						
7						
8						

IF statements in Excel

=IF(logical_statement, [value_if_true], [value_if_false])

If the logical statement is TRUE, do one thing
If the logical statement is FALSE, do another thing

e.g. =IF(A1=B1, 1, 0)

If Statements and Statistics

We can combine if statements and statistical functions!

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  - input: a set of numbers
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- AVERAGEIFS:
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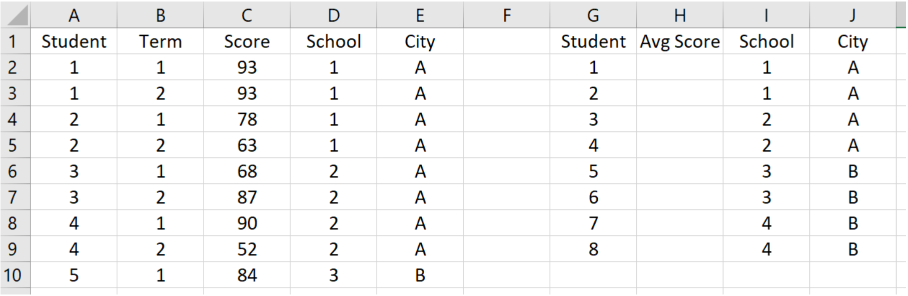
- Same with SUMIF, SUMIFS, COUNTIF, COUNTIFS.

Change unit of analysis using functions



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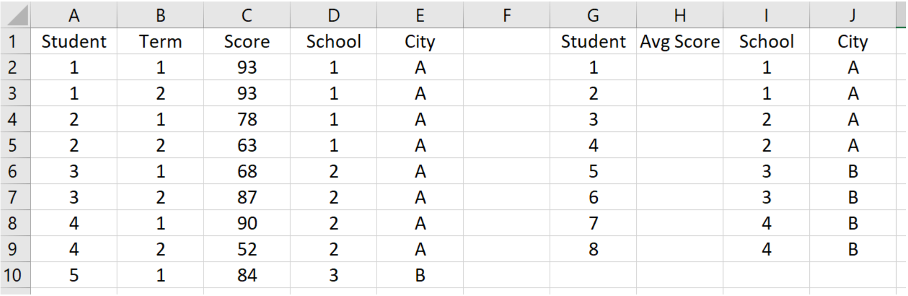

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- Use AVERAGEIF(range, criteria, average_range).

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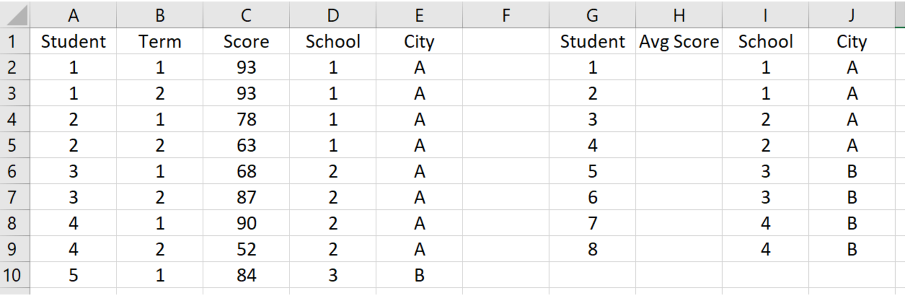

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- Use AVERAGEIF(range, criteria, average_range).
- Try coarsening to the ‘school’ and ‘city’ units of analysis

Next class

Friday we will practice using these functions.

See you then!