**Spreadsheets - Analyze Data (Second Week)**

## Aggregation Functions

**Aggregation Function**: A function that operates across a group of data, resulting in a single value. Examples include SUM, AVERAGE, MAX, MIN, MEDIAN and STDEV, although there are many more.

## Logical Functions: IF

The IF function can return different values based on whether a condition is true or false. The first parameter is the condition, the second is what the cell value should be if the condition is true, and the optional third parameter is the cell value if the condition is false (skipping the third parameter will otherwise just show "FALSE" in the cell).

**Comparison Operator**: Compare the relative size or equality of two values with these operators. The result is a logical value of either true or false. The operators are as follows:

* > for greater than
* < for less than
* = for equal
* >= for greater than or equal to
* <= for less than or equal to
* <> for not equal (note that are no equal signs!)

## Logical Functions: AND, OR, NOT

AND is another useful logical function, which can combine more than one condition. If used with an IF statement, note that it is nested within the IF function, such as:

IF(AND({condition1}, {condition2}), ...)

AND requires that all conditions are true to be true. There is also the OR function, which just needs one of any of its conditions to be true for it to be true itself. Lastly, there is also the NOT function, which reverses a true to false or a false to true.

## Conditional Aggregation Functions

**Conditional Aggregation Function**: A function that operates across a group of data with logical conditions. COUNTIF and SUMIF are two examples of such functions.

COUNTIF will count the number of cells in a range that meet a given condition.

Likewise, SUMIF will instead sum the values from the cells in a range that meet a given condition.

## Pivot Tables

In **Google Sheets** pivot tables can be found in the Data menu. I found [this](https://www.youtube.com/watch?v=eUa1LuOjea8) video useful for building pivot tables in Google sheets.

Pivot tables sum and aggregate in a single step. In Excel, if you select all the relevant data, you can use Insert -> Pivot Table (in Google Sheets pivot tables appear under the Data tab instead). You then can click on the desired fields to include in the pivot table, or drag them to the relevant area (such as column or row) you want to use the field within.

In the example in the video, we first chose to make the teams the rows and the positions the columns of the pivot table, with the names as the values. This defaulted to a count of names. After switching to salaries, we switched the aggregation to the sum of the salaries instead.

## Named Ranges

In Excel, you can name a cell by selecting the relevant cell, and then in the "Formulas" tab, select "Define Name". You can then change the name (if desired) or update which cells the name applies to.

If you want to name a range, select the range of data (including labels), and instead select "Create From Selection".

This makes it so you can make the addresses in a formula more clear, where J2 could be replaced by apple\_price, for example.