ABDELGHAFOR'S VIRTUAL INTERNSHIP

DATA ANALYSIS PROGRAM

SESSION (4)

PREPARED BY : MARK KOSTANTINE

Agenda Overview

EXCEL SORT AND FILTER

Excel Sorting

Ranges can be sorted using the **Sort Ascending** and **Sort Descending** commands.

- **Sort Ascending:** from smallest to largest.
- **Sort Descending:** from largest to smallest.

The sort commands work for text too, using A-Z order.

Note: To sort a range that has more than one column, the whole range has to be selected. Sorting just one can breaks the relationship between columns.

Excel Filter

Filters can be applied to **sort and hide** data. It makes data analysis easier.

Note: Filter is similar to formatting a table, but it can be applied and deactivated.

EXCEL CHARTS

Charts are visual representations of data used to make it more understandable.

Commonly used charts are:

- **Pie chart**
- **Column chart**
- **Line chart**

Different charts are used for different types of data.

Note: Charts are also called **graphs and visualizations**.

EXCEL CHARTS

Pie Charts

- Pie charts arrange the data as slices in a **circle.**
- Pie charts are used for representing values of **qualitative (categorical)** data.
- Pie charts show the contribution of each category to the total

- Excel has two types of pie charts:
- **2-D pie**
- **Doughnut**

EXCEL CHARTS

2D Pie Charts

- Pie charts arrange the data as slices in a circle.
- 2-D pie charts are used when you only have **one data column.**

Doughnut Chart

- Doughnut charts arrange the data as slices in a circle with hollow center.
- Doughnut charts are often used when you have **more than one data column.**

Note: A doughnut chart with one data column shows the same information as a 2-D pie chart.

EXCEL CHARTS

Column Charts

Column charts show the data as vertical bars.

Column charts are suited for representing values of **qualitative (categorical)** data.

- Excel has three different types of column charts:
- **Clustered column**
- **Stacked column**
- **100% Stacked column**

Clustered Column Chart

Clustered Column charts are used when **the value of data is important but the order is not.**

EXCEL CHARTS

Stacked Column Chart

Stacked Column charts are used to highlights the **total** amount of contribution for each category.

This is done by stacking columns on top of each other.

The charts are used when you have **more than one data column.**

100% Stacked Column Chart

100% Stacked Column is used to highlights the **proportion** of contribution for each data column in a category.

This is done by scaling the total value of each category in a stacked column chart to 100.

The charts are used when you have **more than one data column.**

EXCEL CHARTS

Line Charts

Line charts show the data as a **continuous line.**

Line charts are typically used for showing **trends** over time.

In Line charts, the horizontal axis typically represents time.

Line charts are used with data which can be placed in an order, from **low to high.**

excel has **six** types of line charts:

- **Line**
- **Line with Markers**
- **Stacked Line**
- **Stacked Line with Markers**
- **100% Stacked Line**
- **100% Stacked Line with Markers**

Note: Excel checks the number of rows and columns included in the chart and automatically places the larger number on **the horizontal axis.**

EXCEL CHARTS

Stacked Line Charts

Stacked Line charts show **the contribution** to trends in the data.

This is done by stacking lines on **top of** each other.

Stacked Line charts are used with data which can be placed in an order, from low to high.

The charts are used when you have **more than one data column** which all add up to the total trend.

Note: Data which can be placed in an order, from low to high, like numbers and letter grades from A to F are called **ordinal data.**

100% Stacked Line Charts

100% Stacked Line charts show **the proportion of contribution** to trends in the data.

This is done by scaling the lines so that the total is 100%.

100% Stacked Line charts are used with data which can be placed in an order, from low to high.

The charts are used when you have **more than one data column** which all add up to the total trend.

PIVOTTABLE

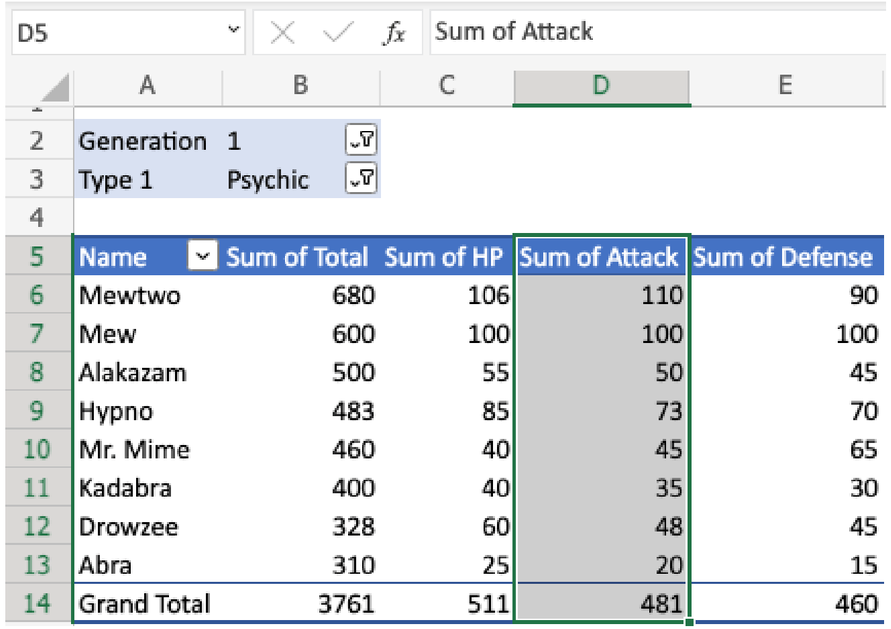
- PivotTable is a functionality in Excel which helps you organize and analyze data.
- It lets you add and remove values, perform calculations, and to filter and sort data sets.
- PivotTable helps you structure and organize data to understand large data sets.

How a PivotTable Works

PivotTables have **four** main components:

1. Columns

- Columns are **vertical** tabular data.
- The column includes the **unique header**, which is on the top.
- The header defines which data you are seeing listed downwards.
- In this example, **D5(Sum of Attack)** is the header.
- D6(110), D7(100), D8(50), D9(73), and so on are the data.



	A	B	C	D	E
2	Generation	1			
3	Type 1	Psychic			
4					
5	Name	Sum of Total	Sum of HP	Sum of Attack	Sum of Defense
6	Mewtwo	680	106	110	90
7	Mew	600	100	100	100
8	Alakazam	500	55	50	45
9	Hypno	483	85	73	70
10	Mr. Mime	460	40	45	65
11	Kadabra	400	40	35	30
12	Drowzee	328	60	48	45
13	Abra	310	25	20	15
14	Grand Total	3761	511	481	460

PIVOTTABLE

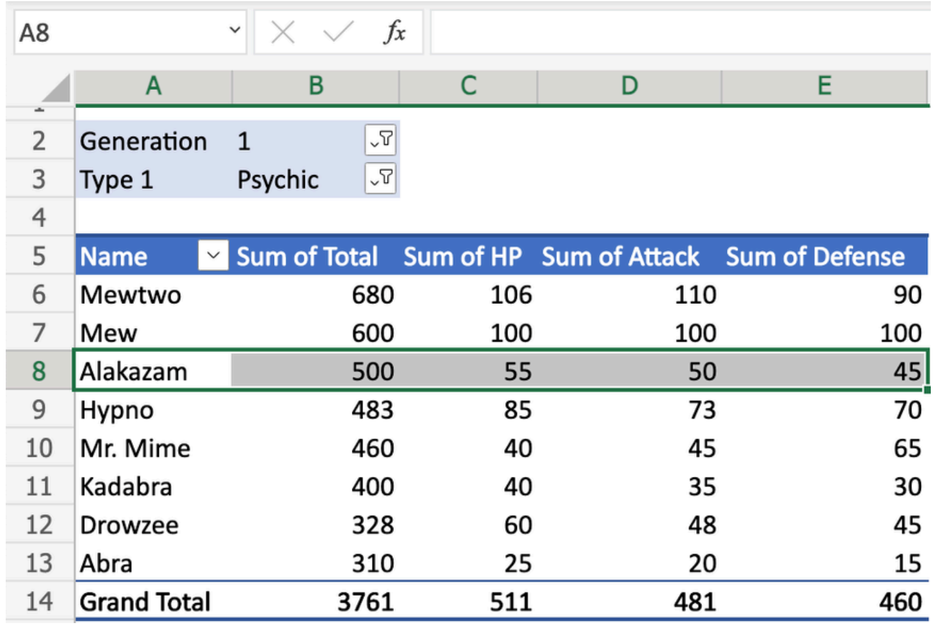
- PivotTable is a functionality in Excel which helps you organize and analyze data.
- It lets you add and remove values, perform calculations, and to filter and sort data sets.
- PivotTable helps you structure and organize data to understand large data sets.

How a PivotTable Works

PivotTables have **four** main components:

2. Rows

- Rows are **horizontal** tabular data.
- Data in the same row are **related.**
- In this example, **A8(Alakazam)** is the Pokemon name.
- B8(500), C8(55), D8(50), E8(45) represents the pokemons stats.
- The type of stats is read in the header in the columns.



A8

	A	B	C	D	E
2	Generation	1			
3	Type 1	Psychic			
4					
5	Name	Sum of Total	Sum of HP	Sum of Attack	Sum of Defense
6	Mewtwo	680	106	110	90
7	Mew	600	100	100	100
8	Alakazam	500	55	50	45
9	Hypno	483	85	73	70
10	Mr. Mime	460	40	45	65
11	Kadabra	400	40	35	30
12	Drowzee	328	60	48	45
13	Abra	310	25	20	15
14	Grand Total	3761	511	481	460

PIVOTTABLE

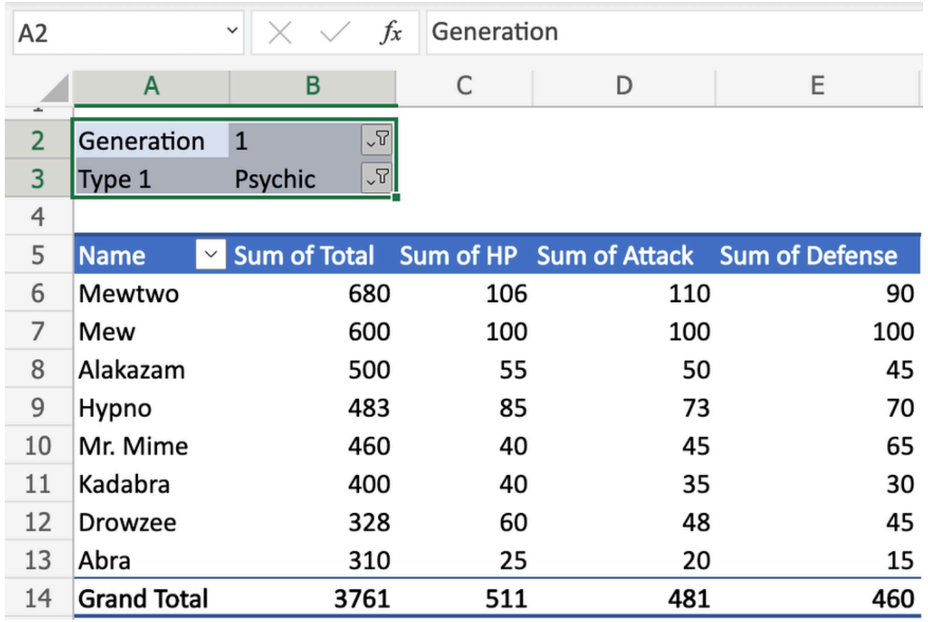
- PivotTable is a functionality in Excel which helps you organize and analyze data.
- It lets you add and remove values, perform calculations, and to filter and sort data sets.
- PivotTable helps you structure and organize data to understand large data sets.

How a PivotTable Works

PivotTables have **four** main components:

3. Filters

- Filters are used to **select what data you see.**
- In this example, there are two filters enabled: **Generation and Type 1.**
- The filters are set to Generation (1) and Type (Psychic).
- We will only see Generation 1 pokemon that is Type 1, Psychic.
- All pokemon in the table below the filter are of this generation and type.



A2 | Generation

	A	B	C	D	E
2	Generation	1			
3	Type 1	Psychic			
4					
5	Name	Sum of Total	Sum of HP	Sum of Attack	Sum of Defense
6	Mewtwo	680	106	110	90
7	Mew	600	100	100	100
8	Alakazam	500	55	50	45
9	Hypno	483	85	73	70
10	Mr. Mime	460	40	45	65
11	Kadabra	400	40	35	30
12	Drowzee	328	60	48	45
13	Abra	310	25	20	15
14	Grand Total	3761	511	481	460

PIVOTTABLE

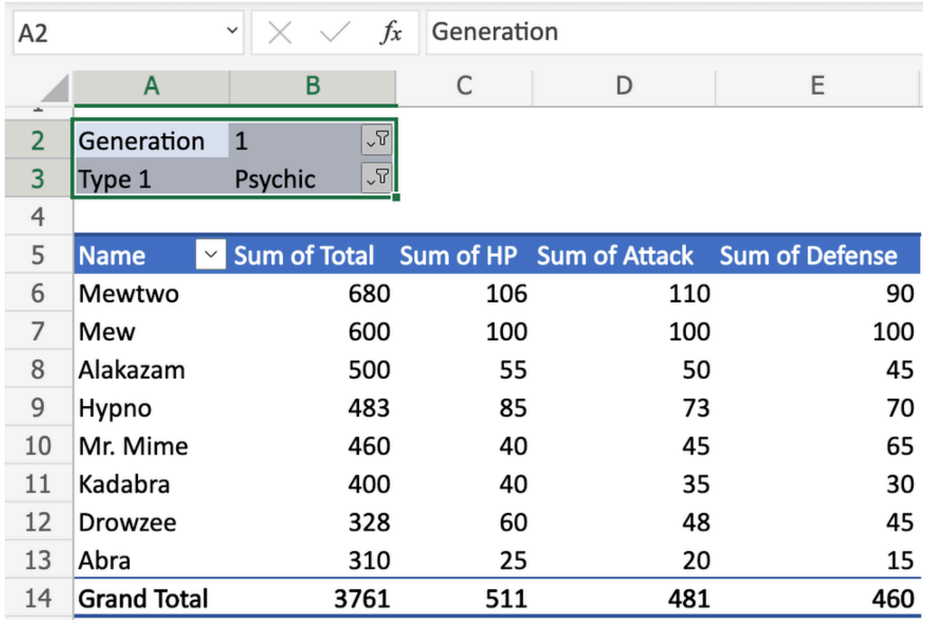
- PivotTable is a functionality in Excel which helps you organize and analyze data.
- It lets you add and remove values, perform calculations, and to filter and sort data sets.
- PivotTable helps you structure and organize data to understand large data sets.

How a PivotTable Works

PivotTables have **four** main components:

4. Values

- Values define how you **present** the data.
- You can define how you Summarize and Show values.
- In this example, values are defined for the range B5:E5.
- The range B5:E5 has all the same value setting: **Sum**
- The Sum is summarized in the range B14:E14.



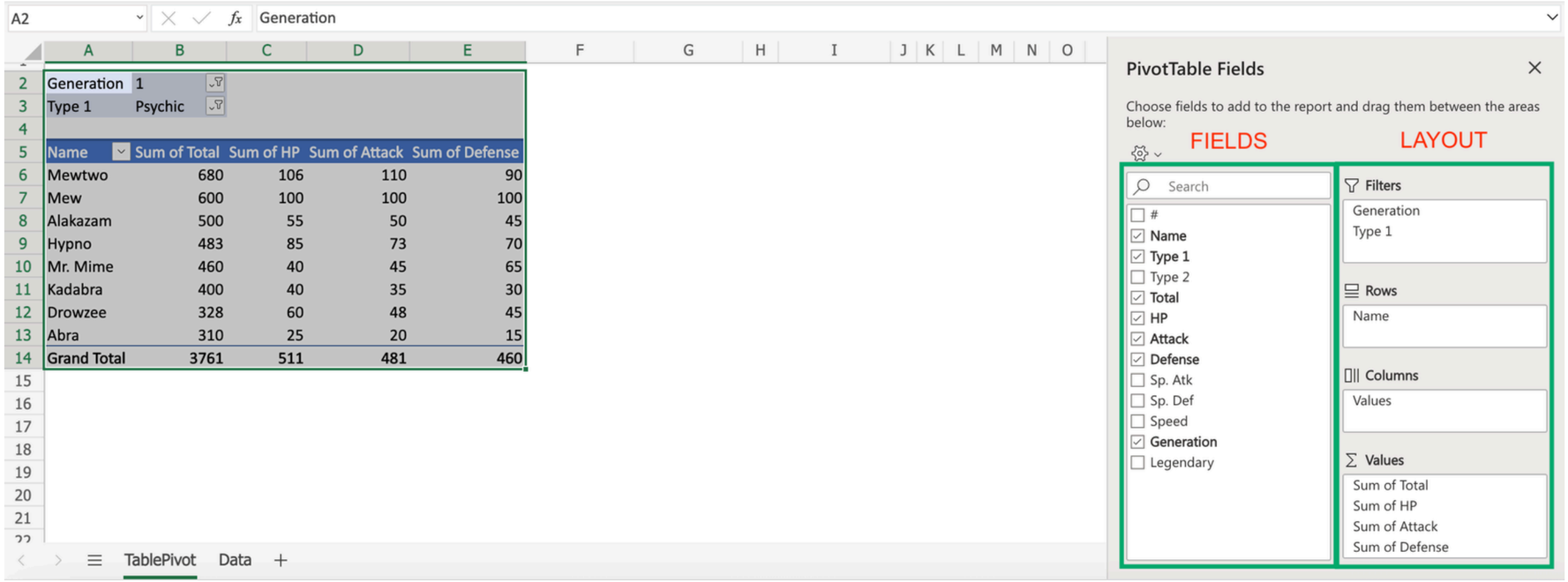
A2 | Generation

	A	B	C	D	E
2	Generation	1			
3	Type 1	Psychic			
4					
5	Name	Sum of Total	Sum of HP	Sum of Attack	Sum of Defense
6	Mewtwo	680	106	110	90
7	Mew	600	100	100	100
8	Alakazam	500	55	50	45
9	Hypno	483	85	73	70
10	Mr. Mime	460	40	45	65
11	Kadabra	400	40	35	30
12	Drowzee	328	60	48	45
13	Abra	310	25	20	15
14	Grand Total	3761	511	481	460

PIVOTTABLE

Fields and layout

- The TablePivot is displayed how by your settings.
- The PivotTable Fields panel is used to change how you see the data.
- The settings can be separated in two: **Fields and Layout.**



EXCEL FUNCTIONS

SUM Function

The **SUM** function is a premade function in Excel, which adds numbers in a range.

It is typed **=SUM**

Note: The **=SUM** function adds cells in a range, both **negative and positive.**

How to use the **=SUM** function:

a. Select a cell
b. Type **=SUM**
c. Double click the **SUM** command
d. Select a range
e. Hit enter

EXCEL FUNCTIONS

IF Function

The **IF** function is a premade function in Excel, which returns values based on **a true or false** condition.

It is typed **=IF** and has 3 parts

```
=IF(logical_test, [value_if_true], [value_if_false])
```

The condition is referred to as **logical_test**, which can check things like:

- If a number is greater than another number **>**
- If a number is smaller than another number **<**
- If a number or text is equal to something **=**

Note: You can decide both the return values and the condition.

Note: The different parts of the function are separated by a symbol, like comma **,** or semicolon **;** The symbol depends on your Language Settings.

EXCEL FUNCTIONS

VLOOKUP Function

The **VLOOKUP** function is a premade function in Excel, which **allows searches across columns.**

It is typed **=VLOOKUP** and has the following parts:

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

Note: The column which holds the data used to lookup must always be **to the left.**

Lookup_value: Select the cell where search values will be entered.

Table_array: The table range, including all cells in the table.

Col_index_num: The data which is being looked up. The input is the number of the column, counted from the left

Range_lookup: TRUE if numbers (1) or FALSE if text (0).

Note: Both 1 / 0 and True / False can be used in **Range_lookup.**

EXCEL FUNCTIONS

COUNTIF Function

The **COUNTIF** function is a premade function in Excel, which **counts cells** as specified.

It is typed **=COUNTIF**

Note: The **COUNTIF** function can have basic or more advanced uses. This covers the basic use for how to count specific numbers and words.

How to use the =**COUNTIF** function:

a. Select a cell
b. Type **=COUNTIF**
c. Double click the **COUNTIF** command
d. Select a range
e. Type **,**
f. Select a cell (the criteria, the value that you want to count)
g. Hit enter

EXCEL FUNCTIONS

SUMIF Function

The **SUMIF** function is a premade function in Excel, which calculates the sum of values in a range based on **a true or false** condition.

It is typed **=SUMIF**:

```
=SUMIF(range, criteria, [sum_range])
```

The condition is referred to as criteria, which can check things like:

- If a number is greater than another number **>**
- If a number is smaller than another number **<**
- If a number or text is equal to something **=**

The **[sum_range]** is the range where the function calculates the sum.

Note: The **[sum_range]** is optional, If not specified, the function calculates the sum of the same range as the condition.

EXCEL FUNCTIONS

SUMIFS Function

The **SUMIFS** function is a premade function in Excel, which calculates the sum of a range based on one or more true or false condition.

It is typed **=SUMIFS:**

```
=SUMIFS(sum_range, criteria_range1, criteria1, [criteria_range2, criteria2] ...)
```

The conditions are referred to as criteria1, criteria2, and so on, which can check things like:

- If a number is greater than another number **>**
- If a number is smaller than another number **<**
- If a number or text is equal to something **=**

The **criteria_range1, criteria_range2**, and so on, are the ranges where the function check for the conditions.

The **[sum_range]** is the range where the function calculates the sum.

EXCEL FUNCTIONS

AVERAGE Function

The **AVERAGE** function is a premade function in Excel, which calculates the average **(arithmetic mean).**

It is typed **=AVERAGE**

It adds the range and divides it by the number of observations.

Example:

- The average of (2, 3, 4) is 3.
- 3 observations (2, 3 and 4)
- The sum of the observations (2 + 3 + 4 = 9)
- (9 / 3 = 3)
- The average is 3

Note: The AVERAGE function ignores cells with text.

EXCEL FUNCTIONS

STDEV.S Function

The **STDEV.S** function is a premade function in Excel, which calculates **the Standard Deviation (Std)** for a sample.

It is typed **=STDEV.S**

Note: This function ignores cells with text and logic.

Note: Standard deviation **(σ)** measures how far a 'typical' observation is from the average of the data **(μ).**

How to use the **=STDEV.S** function:

1. Select a cell (H5)
2. Type **=STDEV.S**
3. Double click the **STDEV.S** command
4. Select a range (E2:E21)
5. Hit enter

ANY QUESTIONS ?

DATA ANALYSIS PROGRAM

THANK YOU

UPCOMING NEXT WEEK : SESSION (5)