Q1. What does the dollar($) sign do?

Ans: A dollar symbol, when added in front of the row and column number, makes it absolute (i.e., stops the row and column number from changing when copied to other cells).

For example, in the above case, when I copy the formula from cell E2 to E3, it changes from =D2*G1 to =D3*G1.

Note that while D2 changes to D3, G1 doesn't change.

Since we have added a dollar symbol in front of 'G' and '1' in G1, it wouldn't let the cell reference change when it's copied.

Hence this makes the cell reference absolute.

A dollar sign in Excel is used for absolute cell referencing. This tells Excel that you want to always refer to a specific cell even when your formula is copied across.

A cell reference is simply telling Excel the location of the cell (or cells) you want to use in your formula.

There are two types of cell referencing: relative cell referencing and absolute cell referencing.

A relative reference in Excel is a cell address without the $ sign in the row and column coordinates, like *A1*.

When a formula with relative cell references in copied to another cell, the reference changes based on a relative position of rows and columns. By default, all references in Excel are relative.

An absolute reference in Excel is a cell address with the dollar sign ($) in the row or column coordinates, like *A1*.

The dollar sign fixes the reference to a given cell, so that it remains unchanged no matter where the formula moves. In other words, using $ in cell references allows you to copy the formula in Excel without changing references.

Q2. How to Change the Reference from Relative to Absolute (or Mixed)?

Ans: To change the reference from relative to absolute, you need to add the dollar sign before the column notation and the row number.

For example, A1 is a relative cell reference, and it would become absolute when you make it A1.

If you only have a couple of references to change, you may find it easy to change these references manually. So you can go to the formula bar and edit the formula (or select the cell, press F2, and then change it).

However, a faster way to do this is by using the keyboard shortcut – F4.

When you select a cell reference (in the formula bar or in the cell in edit mode) and press F4, it changes the reference.

Suppose you have the reference =A1 in a cell.

Here is what happens when you select the reference and press the F4 key.

- **Press F4 key once:** The cell reference changes from A1 to A1 (becomes 'absolute' from 'relative').
- **Press F4 key two times:** The cell reference changes from A1 to A$1 (changes to mixed reference where the row is locked).
- **Press F4 key three times:** The cell reference changes from A1 to $A1 (changes to mixed reference where the column is locked).
- **Press F4 key four times:** The cell reference becomes A1 again.

Q3. Explain the order of operations in excel?

Ans: When evaluating a formula, Excel follows a standard math protocol called "order of operations". In general, Excel's order of operation follows the acronym PEMDAS (Parentheses, Exponents, Multiplication, Division, Addition, Subtraction) but with some customization to handle the formula syntax in a spreadsheet.

First, any expressions in parentheses are evaluated. Parentheses essentially override the normal order of operations to ensure certain operations are performed first.

Next, Excel will resolve references. This involves replacing cell references like A1 with the value from the cell, as well as evaluating range references like A1:A5, which become arrays of values. Other range operations like union (comma) and intersection (space) also happen at this time.

Next, Excel will perform exponentiation, negation, and percent conversions (in that order), followed by multiplication and division, addition and subtraction, and concatenation. Finally, Excel will evaluate logical operators, if present.

Q4. What, according to you, are the top 5 functions in excel and write a basic syntax for any of two?

Ans: **(a) The SUM Function**

The *sum* function is the most used function when it comes to computing data on Excel. This function works to sum a group of numbers in a specific set of cells. This means you

don’t need to type a long cumbrous formula just to calculate the sum of all the data you need. Because of its popularity, newer versions of Microsoft Excel have a button specifically for this function.

This function is performed by typing the formula on the function bar and highlighting the cells you want summed before clicking “Enter”. You also need to be careful in highlighting cells, as Excel will sum everything you include. If this happens, you can easily click the “Undo” button to reset the values back to its original state.

The syntax formula for *sum* function is “=SUM” (number1, number2, etc.).

In this image, the *sum* function for the cells C2 through C7 is obtained through the formula “=SUM(C2:C7)”, giving you the result of 33161.

(b) The TEXT Function

Text function is a useful tool that helps convert a date (or number) into a text string in a particular format. It falls in the category of string formulas that converts numerical values to a string. It is handy when users need to view numeric data in a readable format. Take note that the “TEXT” formula only works to convert numeric values to text. Therefore, its results cannot be calculated.

The syntax formula for *text* function is “=TEXT” (value, format_text).

- “Value” refers to the particular number you wish to convert to text.
- “Format_text” defines the format of the conversion.

In this example, the user uses a text formula to find the abbreviated day for the date “=TEXT (B2, “ddd”)”.

(c) The VLOOKUP Function

VLookup is powerful Excel function that is often overlooked. Users will find it useful when they need to find specific data on a large table. You can also use *VLookup* to search for names, phone number, or specific data on your sheet. Instead of manually looking for the names and wasting time scrolling through hundreds of data, the *VLookup* function makes this process faster and more efficient.

The *VLookup* formula is “=VLOOKUP” (lookup_value, table_array, col_index_num, *range_lookup*).

- “lookup_value” is the data you want to find.
- “table_array” is the data column where you want to limit your search.
- “col_index_num” is the column number within the table that you want to return a value from.
- “range_lookup” is an optional argument that allows you to search for the exact match of your lookup value without sorting the table.

(d) The AVERAGE Function

The *average* function is an extremely useful tool for getting the average value in a range of cells. Like the *sum* function, it is frequently used in computing and analyzing data on spreadsheet. Basically, the *average* function works to find the "arithmetic mean" for a group of cells. Aside from the *average* function, Excel also has the *median* and *mode* function.

The syntax formula for the *average* function is "AVERAGE" (number1, number2, etc.).

- "Number 1" refers to the first number in the range where you want the average.
- "Number 2" is the additional reference of the average range. You can get an average of up to a maximum of 255 cells.

Additional Examples:

"=AVERAGE (A2:A10)" – computes the average of numbers in cells A2 through A10.

"=AVERAGE (B2: B10, 7)" – computes the average of the numbers in cells B2 through B10 and the number 7.

(e) The CONCATENATE Function

This function is a good time saver when you need to combine data from 2 or more cells. Unlike the merge tool which physically merges two or more cells into a single cell, the *concatenate* function only combines the contents of the combined cells. In the latest version of Excel (2016), the *concatenate* function has been replaced with *concat* function and will be incorporated in more future versions of Excel.

The syntax formula for the *concatenate* function is "CONCATENATE" (text1, [text2…text_n]),

- "Text1, Text2…text_n" are the data you want to combine.

Q5. When would you use the subtotal function?

Ans: The SUBTOTAL Function In Excel allows users to create groups and then perform various other Excel functions such as SUM, COUNT, AVERAGE, PRODUCT, MAX, etc. Thus, the SUBTOTAL function in Excel helps in analyzing the data provided.

SUBTOTAL = (method, range1, [range2 …range_n])

Where method is the type of subtotal you wish to obtain

Range1,range2…range_n is the range of cells you wish to subtotal

Why do we need to use SUBTOTALS?

Sometimes, we need data based on different categories. SUBTOTALS help us to get the totals of several columns of data broken down into various categories.

For example, let's consider garment products of different sizes manufactured. The SUBTOTAL function will help you to get a count of different sizes in your warehouse.

Steps for the SUBTOTAL function:
(a) Click on Subtotal. Remember we are adding one more criterion to our current Subtotal data.

(b) Select COUNT from the drop-down menu, and Size from the "Add subtotal field to." After that, uncheck the "Replace current subtotals." Once you click OK, you will get the data.

Q6. What is the syntax of the vlookup function? Explain the terms in it?

Ans: Vlookup Syntax

The syntax of the Excel Vlookup function is:

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

where the function arguments are:

lookup_value - The value that you want to search for.

table_array -

The array of data that is to be searched for the lookup_value.

Note: The Vlookup function searches in the left-most column of this array.

col_index_num - An integer, specifying the column number of the supplied table_array, that you want to return a value from.

[range_lookup] -

An optional logical argument that describes what the function should return in the event that it does not find an exact match to the lookup_value.

The [range_lookup] can be set to TRUE or FALSE, meaning:

TRUE -

If an exact match is not found, use the closest match below the lookup_value.

Note: if this option is used, the left-hand column of the table_array must be in ascending order.

FALSE- If an exact match to the lookup_value is not found, return an error.

If the [range_lookup] value is omitted, it uses the default value of TRUE.