# Computer Education Notes 2nd Term
## Class: 8th

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# Computer Science Notes (2<sup>nd</sup> Term 2021 – 22)

## Unit # 3 (Spreadsheets in MS – Excel)

### Q. 4 – Give brief answers to the following questions:

i.  **Spreadsheet:** Spreadsheet is a computer program used to enter, analyze and calculate data for record keeping. It stores and presents data in tabular form.

- **Workbook:** A workbook is a file created by Excel spreadsheet application. A workbook consists of spreadsheet pages. Each page can include separate data. One workbook may contain many worksheets.

- **Worksheet:** A single page in a workbook is called worksheet. It is a collection of cells on a single sheet where user keeps and manipulates data.

- **Cell:** The intersection of row and column in a worksheet is called cell. It is the basic unit of data where user can enter data, function and formula.

- **Cell Address:** Cell address identifies the location of a cell or group of cells in a worksheet. It consists of "column letter and row number" that intersects at the cell's location.

- **Cell Reference:** It identifies the location of a cell. It is used in formulas, functions and other excel commands.

- **Formula:** A formula is an equation that performs calculation using values in the worksheet. A formula always begins with an equal sign. Values or cell references appear after equal sign. E.g. =D8+F9+E9, =23+29

- **Function:** Functions are predefined or built-in formulae. They are used to perform different calculations. Different functions are available in Excel. Each function has a specific order as follows:

ii.  **Give few purposes of spreadsheet.**

Spreadsheets are used in different fields like accounting, budgeting, charting/graphing, financial analysis and scientific applications etc.

iii. **Name any five components of Excel window.**

Components of Excel window are as follows:

- Office Button
- Title Bar
- Ribbon Tab
- Formula Bar
- Name Box
- Document Window
- Sheet Tabs

iv. **What is cell range? Give one example.**

Selecting more than one cell is known as cell range. Two cell references are used for range of cells separated by a colon. The colon tells the Excel to include all the cells between the start and end points.

v. **What is auto-filling feature in Excel?**

Auto filling is the use of fill handle to copy data and sequences across range of cells. Fill handle is at the bottom right corner of each cell.

vi. **How formula is used in Excel sheet? Give one example.**

Adding two numbers using formula:

- Click/select the cell where formula will be entered.
- Type equal sign
- Click on the first cell containing the number
- Press the addition sign
- Click on the second cell containing another number
- Press enter button to complete the addition

vii. **Name different parts of function with the help of an example.**

- Each function has a specific order as follows:
  - Each function begins with an equal sign
  - After equal sign, the function is inserted (e.g. sum, product)
  - Then there will be an Argument

Equal Sign ⟵ **=SUM(A3:A9)**

**Function Name**          **Arguments**
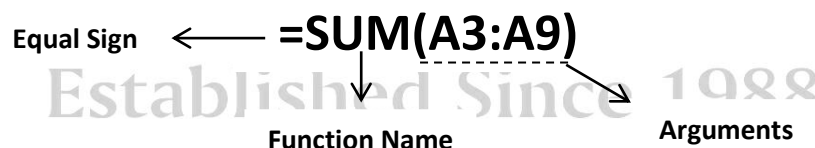
**viii.     What is the difference between copy paste and cut paste?**

| Copy – Paste | Cut – Paste |
|---|---|
| It is used to take the duplicate of the selected cell. | It is used to move the text from one place to another. |
| It does not remove the text from its original location. | It removes the text from its original location. |

**ix.     What is chart? Name any three types of charts used in Excel.**

Charts are graphical representation of data entered in a worksheet. They are helpful in showing the comparison between different categories. Excel offers many types of charts like Column, Bar, Pie, Line, Area and Scatter.
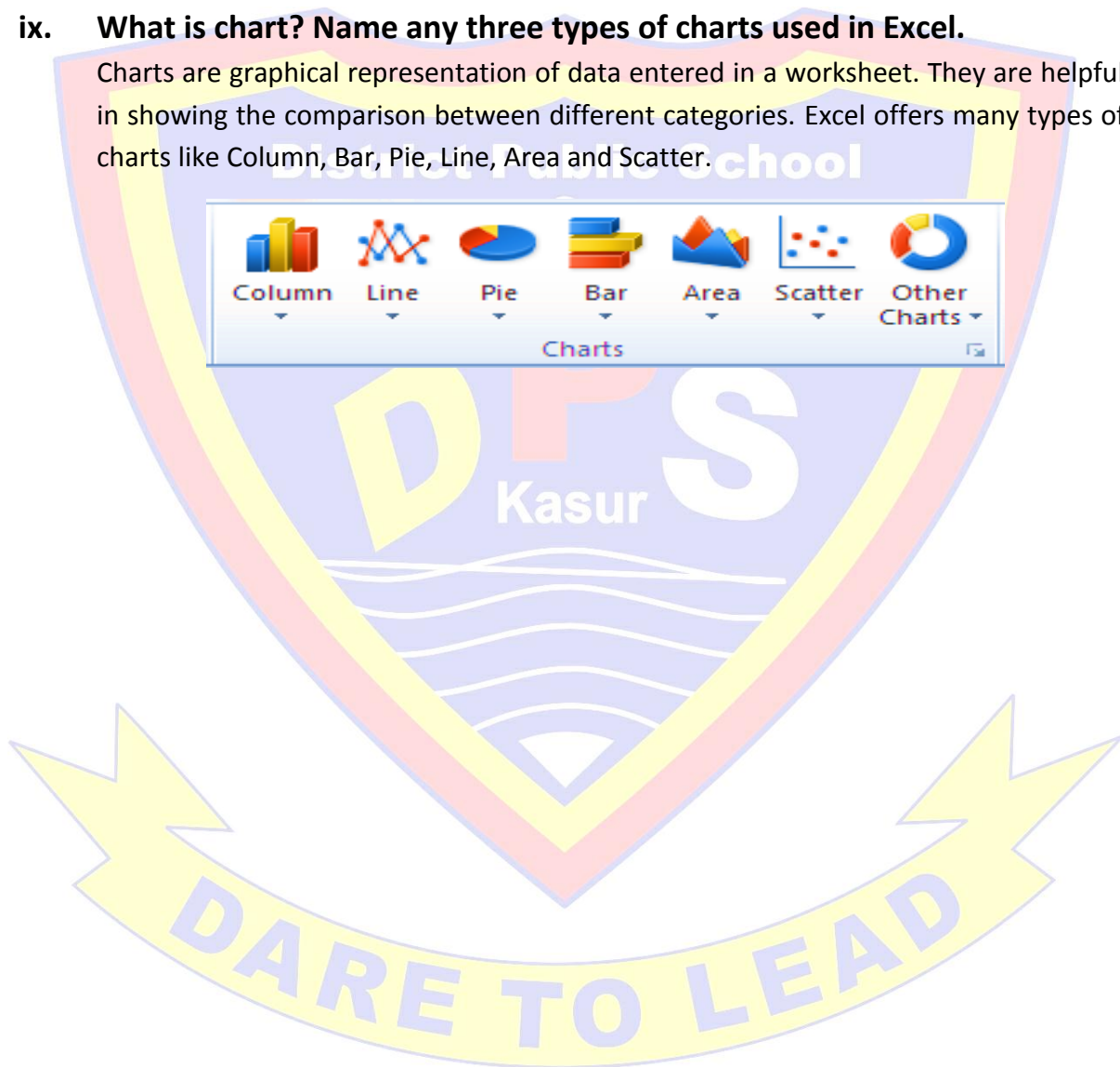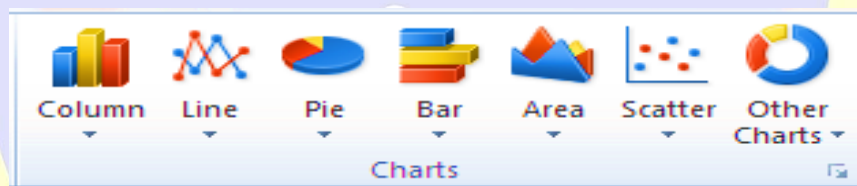
## Q. 5 – Give detailed answers to the following questions.

### i. Explain different parts/components of Excel window.

MS – Excel window consists of several components discussed below:

Office Button: Office button is located at the top left of the excel window. Clicking this button opens a menu of different commands.

Title Bar: It is located at the top of excel window. Name of the workbook is displayed on this bar.

Quick Access Toolbar: This bar gives access to frequently used commands. Undo, redo, and save commands appear on this bar.

Ribbon: The ribbon is located below the title bar. Commands on the ribbon are organized in seven tabs. Each tab is divided into groups which have buttons of related commands.

Formula Bar: This bar displays the contents of active cell. User can type formula in active cell. It is used to edit the contents of a cell easily.

Name Box: It displays the reference of an active cell. It is located next to the formula bar. It can be used to a specific cell by entering the name of cell in it.

Document Window: This window contains an excel workbook consists of number of worksheets. A worksheet is a document window where user can enter data and modify it. Worksheet is made up of rows and columns.

Sheet Tabs: They are used to access different worksheets in a workbook. Three sheets are available in a workbook. User can add more tabs as per requirement.

### ii. Explain basic elements of a worksheet.

The following are the basic elements of a worksheet:

Columns: Columns are arranged vertically in a worksheet. They are identified by an alphabet in the column header from A to Z, AA, AB, and AC to XFD.

Rows: Rows are arranged horizontally in a worksheet. They are identified by numbers in the row header (1, 2, 3…..).

Cell: The intersection of row and column in a worksheet is called cell. It is the basic unit of data in the worksheet where user can enter data, function and formula.

Cell Address/Reference: Cell address identifies the location of a cell or group of cells in a worksheet. It consists of "column letter and row number" that intersects at the cell's location.

Cell Range: Selecting more than one cell is known as cell range. Two cell references are used for a range of cells separated by a colon. The colon tells the Excel to include all the cells between the start and end points.

### iii. Give purpose of the following functions with the help of examples:

- **Sum:** This function adds all the numbers that a user specifies as argument. Arguments can be range, cell reference, a formula and any function. For example =SUM(B5:B9) adds all the numbers in the cells from B5 to B9.

- **Product:** The product function multiplies all the numbers given as argument and returns the product. For example =PRODUCT(A1, A2) multiply two numbers in cells A1 and A3.
- **Average:** This function returns the average (Arithmetic Mean) of the arguments. For example =AVERAGE(B1:B5) returns the average of numbers in the given cell range.
- **Power:** It returns the result of a number raised to its power. Its general form is =POWER(number, power). Number is the base number and power is the exponent to which the base number is raised. For example =POWER(55, 3) will raise 55 to the power 3.
- **SQRT (Square Root):** This function calculates the square root of a given number. Its general form is =SQRT(number). Number is the value for which the square root will be calculated. The function =SQRT(256) finds the square root of the number in brackets.
- **Max (Maximum):** This function returns the largest value from a set of numerical values. The function =MAX(A1:E1) returns the maximum value from the given range of cells.
- **Min (Minimum):** This function returns the smallest value from a set of numerical values. The function =MIN(A1:E1) returns the minimum value from the given range of cells.

iv. **What is text formatting? Give procedure to change font and font size in Excel.**

It includes formatting font size, style and color using the Bold, Italic, Underline and Aligning the text. User can format a single cell or range of cells.

- **Procedure to Change Font:**
    - Select the cell/cell range to change font
    - Choose Home Tab
    - Click the down arrow next to the Font Box
    - Find and click the desired font from the list
- **Procedure to Change Font Size:**
    - Select the cell/cell range to change font size
    - Choose Home Tab
    - Click the down arrow next to the Font Size Box (A list will appear)
    - Find and click the desired font size from the list

v. **What is a border? Give procedure to apply a border to a selected range in Excel.**

Borders are outlines around the cell/cells. User can use borders to make entries more noticeable in the worksheet.

- **Procedure to Apply Borders:**
    - Select the cell/cell range to apply borders
    - Choose Home Tab
    - Click the down arrow next to the Borders Button (A menu will appear)
    - Find and click the desired border from the menu
    - Excel applies the border to the selected cell/cell range

**vi.    Give procedure to insert new rows and columns in Excel.**

User can insert new rows and columns in the worksheet. Procedure is given below.

| Procedure to Insert Column | Procedure to Insert Rows |
|---|---|
| Click on the column before which a new column is to be inserted | Click on the rows above which a new row is to be inserted |
| Click down arrow next to Insert in the Cells group (A menu appears) | Click down arrow next to Insert in the Cells group (A menu appears) |
| Click insert sheet column | Click insert sheet rows |
| Excel inserts new column/columns | Excel inserts new row/rows |

**vii.    Write down the steps to create a Bar chart in Excel.**

- **Procedure to Insert a Bar Chart is as follows:**
  - Select the cells to include as data for Bar chart
  - Click the Insert menu
  - Click Bar from the charts group
  - Click the down arrow and select the first Bar chart subtype
  - A Bar chart will be inserted in the worksheet

**viii.    Write down the steps to create a Pie chart in Excel.**

- **Procedure to Insert a Bar Chart is as follows:**
  - Select the cells to include as data for Pie chart
  - Click the Insert menu
  - Click Pie from the charts group
  - Click the down arrow and select the first Pie chart subtype
  - A Pie chart will be inserted in the worksheet
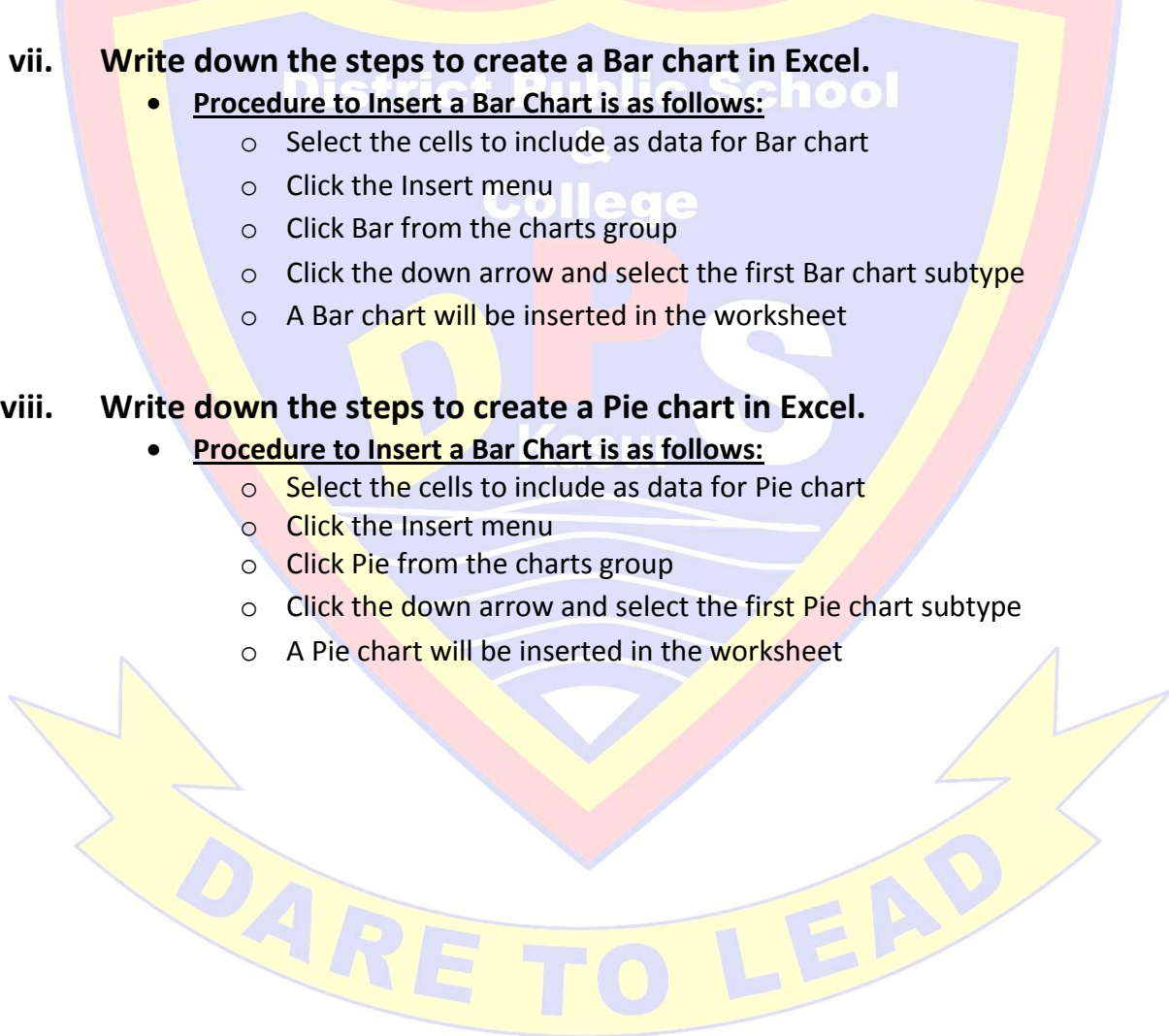
# Unit # 5 (Computer Programming)

## Q. 4 – Give brief answers to the following questions.

### i. What is a program? Give few examples of programs.

A computer program is a sequence of instructions given to the computer to perform a specific task. It is written in some programming language. Examples of programs are:

- Program to solve quadratic equation
- Program to find area of a circle
- Program to manage items on a grocery store
- Program to find average marks of a student in the final exam

### ii. What is the purpose of programming language?

Programming languages provide means of communication between users and computer. Users as well as computers understand these languages.

### iii. Differentiate between a constant and a variable.

| Constant | Variable |
|---|---|
| Quantity whose value does not change during program execution. | Quantity whose value changes during program execution. |
| They are represented as "Named Space" in computer memory. | It is also represented as "Named Space" in computer memory. |
| It has two types String and Numeric constants. | They are used to store data and results during program execution. |
| | It has two types String and Numeric constants. |

### iv. Differentiate between syntax and logical error.

| Syntax Error | Logical Error |
|---|---|
| Syntax errors occur due to violation of rules of programming language. | Logical errors occur due to programmer's own logical mistake. |
| These are easy to find and correct. | Computer system does not display any error message. |
| Computer system displays an error message for this error. | These errors are hard to find and correct. |
| Example typing PRNT instead of PRINT. | Example typing Sum= X- Y instead of Sum= X+Y |

**v.    What are the rules for defining/declaring variables in GW – BASIC?**

In programming languages like GW – BASIC, certain rules are followed to declare/define a variable which are as follows:

- Alphabet and numbers can be used for declaring variable.
- First character of the variable name must be an alphabet.
- No special symbol is allowed except underscore sign (_).
- Underscore (_) cannot be used as first or last character.

**vi.    Name different type of constants with examples.**

There are two types of constants which are:

- String Constant (Examples are "DPS Kasur", "Haris Ali", "House # 109" etc.)
- Numeric Constant (Examples are 117, 8976, -50 etc.)

**vii.    Give precedence of arithmetic operators.**

The precedence of arithmetic operators is given below:

| Priority Level | Operator Name | | Symbol | |
|---|---|---|---|---|
| First | Exponent Operator | | ^ | |
| Second | Multiplication | Division | * | / |
| Third | Modulus Operator | | MOD | |
| Fourth | Addition | Subtraction | + | - |

**viii.    What is the purpose of Modulus (MOD) operator?**

MOD (Modulus) operator is an arithmetic operator used to return the **Remainder** after division.

**Q. 5 – Give detailed answers to the following questions.**

**i. Explain different types of errors in programming with examples.**

<u>Syntax Error:</u> A syntax error occurs when the instruction written in a program do not follow the rules of the programming language. These errors are easy to find and correct because compiler finds them for the user. For example, typing Prnt instead of Print.

<u>Logical Error:</u> These errors occur due to wrong use of formula or for providing wrong value to a variable. If a programmer writes a statement that is logically incorrect, the computer will execute it but the result will be wrong. Such errors cannot be detected by compiler. They are hard to find and correct. For example, Writing Sum=X+Y instead of Sum=X*Y.

**ii. What is arithmetic expression? Explain different types of operators with examples.**

"Arithmetic Expression" represents a numeric value. It is evaluated by performing a sequence of arithmetic operations to obtain a numeric value. Some examples are as follows: Exp1=(A+3)*(C+2), Exp2=2*X+3*Y.

There are three types of operators used in GW – BASIC:

<u>Arithmetic Operators:</u> They are used to perform mathematical calculations like addition, subtraction, division, multiplication and exponentiation. The following table gives the description of arithmetic operators with examples:

| Symbol | Operation | Description | Example |
|--------|-----------|-------------|---------|
| + | Addition | Returns the sum of values | A+b+c, x+50 |
| - | Subtraction | Returns the difference of values | x-56, a-c |
| * | Multiplication | Returns the product of values | A*b, y*67 |
| / | Division | Returns the quotient | X/Y, B/40 |
| ^ | Exponent (Power) | Raise the value to its power | A^10, 5^2 |
| MOD | Modulus | Returns the remainder after division | 15MOD 2 |

<u>Assignment Operator:</u> An operator used to assign a value to a variable is called "Assignment Operator". Equal sign (=) is used for this purpose. For example A=68.

**Relational Operators:** These operators are used to perform comparison on two values. The result of comparison is either True (Non Zero) or False (Zero). The following table gives the description of relational operators with examples:

| Symbol | Operation | Description | Example |
|--------|-----------|-------------|---------|
| = | Equal to | Returns true if two values are equal and false if not | A = B |
| <> | Not equal to | Returns true if two values are not equal and false if equal | 5 <>7 |
| > | Greater than | Returns true if $1^{st}$ value is greater than $2^{nd}$ and false if not | 15 > 11 |
| < | Less than | Returns true if $1^{st}$ value is less than $2^{nd}$ and false if not | 7 < 9 |
| >= | Greater than or equal to | Returns true if the $1^{st}$ number is greater than or equal to the $2^{nd}$ and false if not | (X+1) >= 7 |
| <= | Less than or equal to | Returns true if the $1^{st}$ number is less than or equal to the $2^{nd}$ and false if not | Y <= 6 |