

RESIDENTIAL JEEVAN JYOTI ENGLISH ACADEMY

CLASS IX — INFORMATION TECHNOLOGY (CODE 402)

ELECTRONIC SPREADSHEET

Topic 1: Create a Spreadsheet

1.1 Introduction to Spreadsheet Application

Spreadsheet Application

Definition: A spreadsheet application is a computer program that lets us store, organise, calculate and analyse data arranged in rows and columns.

Simple Explanation: Think of a spreadsheet like a big table made of a grid of boxes. Each box can hold a number, a word, or a formula that does maths for us automatically. It saves us from doing calculations by hand.

Example: A teacher uses a spreadsheet to store the marks of 40 students and let the computer calculate the total and average automatically instead of adding numbers on paper.

Key Points:

- Also called an electronic spreadsheet.
- Popular spreadsheet applications: Google Sheets, Microsoft Excel, LibreOffice Calc.
- Used in schools, offices, shops and banks for record keeping and calculations.
- Reduces manual calculation errors and saves time.

Exam Definition (Learn this):

Spreadsheet: A computer application used to enter, organise, calculate and present data in the form of rows and columns.

1.2 Starting a Spreadsheet

To start a spreadsheet program (for example LibreOffice Calc), we follow these simple steps:

1. Click on the Applications menu / Start button on the computer.
2. Select Office suite (for example LibreOffice).
3. Click on LibreOffice Calc (the spreadsheet program).
4. A new blank spreadsheet file opens automatically, ready for data entry.
5. We can also open Calc by double-clicking an existing spreadsheet file (with extension .ods or .xlsx).

Key Points:

A new spreadsheet file is called a Workbook. Every workbook opens with at least one blank sheet called a Worksheet, ready to accept data.

1.3 Parts of a Spreadsheet

When a spreadsheet program opens, we see several parts on the screen. Knowing these parts helps us to work confidently.

Part	Simple Meaning
Title Bar	Shows the name of the file we are working on, at the very top.
Menu Bar	Row of words like File, Edit, View, Insert — clicking opens a list of commands.
Toolbar	Row of small buttons (icons) for quick actions like Save, Bold, Cut, Copy.
Formula Bar	Shows the content (text, number or formula) of the currently selected cell.
Name Box	Small box that shows the address (name) of the selected cell.
Column Headers	Letters (A, B, C, ...) shown at the top of each column.
Row Headers	Numbers (1, 2, 3, ...) shown at the left of each row.
Cell	A single box formed where a row and column meet.
Sheet Tabs	Tabs at the bottom showing sheet names, e.g., Sheet1, Sheet2.
Status Bar	Bottom strip showing useful information like sum or average of selected cells.

1.4 Worksheet – Rows, Columns, Cell and Cell Addresses

Worksheet

Definition: A worksheet is a single page (sheet) inside a spreadsheet file where data is entered in rows and columns.

Simple Explanation: Imagine a workbook as a notebook, and each worksheet as one page of that notebook. We can have many worksheets (pages) inside one workbook (file), each with its own tab name at the bottom.

Example: In a school fee record file, Sheet1 can be used for Class IX fees and Sheet2 for Class X fees — both inside the same workbook.

Key Points:

- A workbook can contain many worksheets.
- Each worksheet has its own grid of rows and columns.
- Worksheets can be renamed, added, deleted or moved.

Exam Definition (Learn this):

Worksheet: A single page of a spreadsheet workbook, made up of rows and columns, used to enter and organise data.

Rows and Columns

Definition: Rows run horizontally (left to right) and are labelled with numbers (1, 2, 3...). Columns run vertically (top to bottom) and are labelled with letters (A, B, C...).

Simple Explanation: Think of rows as horizontal lines and columns as vertical lines, like a chessboard, but rows have number labels and columns have letter labels.

Example: In a student mark sheet, Row 1 may hold column titles (Name, Marks), Row 2 may hold the first student's data, and so on.

Key Points:

- Rows are numbered: 1, 2, 3, 4 ...
- Columns are lettered: A, B, C ... Z, then AA, AB, and so on.
- A worksheet has a fixed but very large number of rows and columns.

Exam Definition (Learn this):

Row: A horizontal group of cells identified by a number. Column: A vertical group of cells identified by a letter.

Cell and Cell Address

Definition: A cell is the small rectangular box formed at the meeting point of a row and a column. Every cell has a unique address made of its column letter followed by its row number.

Simple Explanation: If you stand at the crossing point of Column B and Row 3, that exact spot is called cell B3. The letter always comes first, then the number.

Example: The roll number of the first student may be typed in cell A2, and the name in cell B2.

Key Points:

- A cell can hold text, a number, a date, or a formula.
- Cell address = Column letter + Row number (example: A1, C5, D10).
- The currently selected cell is called the Active Cell and is shown with a dark border.

Exam Definition (Learn this):

Cell: The smallest unit of a worksheet formed by the intersection of a row and a column. Cell Address (Cell Reference): The name given to a cell using its column letter and row number, such as B3.

1.5 Range of Cells

Range of Cells

Definition: A range is a group of two or more cells that are next to each other (adjacent) and are selected or used together.

Simple Explanation: Instead of writing a formula for each cell one by one, we can select a range (a block of cells) and apply a command to all of them together. A range is written as: first cell address : last cell address.

Example: The range A2:A10 means all cells from A2 down to A10 in column A.

Key Points:

- A range is shown using a colon (:) between the first and last cell.
- A range can be a single row, a single column, or a rectangular block.
- Ranges make formulas and formatting much faster to apply.

Exam Definition (Learn this):

Range: A block of two or more adjacent cells selected together, written as FirstCell:LastCell (for example, B2:B8).

Types of Range

Type of Range	Meaning	Example
Column Range	A group of adjacent cells within a single column.	A2:A10 (cells A2 to A10 in column A)
Row Range	A group of adjacent cells within a single row.	B3:F3 (cells B3 to F3 in row 3)
Row and Column Range (Block Range)	A rectangular group of cells covering more than one row and more than one column.	B2:D6 (all cells from B2 to D6)

Example — Student Marks Sheet:

Suppose columns A to D hold Roll No., Name, Maths, Science for 10 students in rows 2 to 11. The range A2:A11 is a column range (roll numbers), B2:D2 is a row range (one student's name and marks), and A2:D11 is a row and column (block) range covering the entire data.

Topic 1 – Key Points (Recap)

- A spreadsheet application stores and calculates data in rows and columns.
- A workbook is the whole file; a worksheet is one page/sheet inside it.
- A cell is formed where a row and column meet; its address = column letter + row number.
- A range is a group of adjacent cells written as First Cell : Last Cell.
- Three kinds of ranges: column range, row range, and row-and-column (block) range.

Topic 2: Apply Formula and Functions in Spreadsheet

2.1 Different Types of Data

A spreadsheet cell can hold different types of data. Knowing the type helps us understand how the spreadsheet will treat it.

Type of Data	Meaning	Example
Text (Label)	Words used to describe data; cannot be used in maths calculations.	"Name", "Roll No.", "Rahul"
Number (Value)	Numeric data that can be used in calculations.	45, 78.5, 1000
Date/Time	Special values representing a date or time.	05/09/2026, 10:30 AM
Formula	An expression starting with = that calculates a result from other cells.	=A2+B2

2.2 Entering Data — Label, Values, Formula

Label

Definition: A label is text data entered in a cell to describe or identify other data. Labels are usually aligned to the left of a cell.

Simple Explanation: Labels are like the headings or names we write, such as column titles. They are not used for calculations.

Example: "Student Name", "Subject", "Total Marks" typed in the top row of a mark sheet are labels.

Key Points:

- Labels are automatically left-aligned in a cell.
- Labels cannot be added, subtracted or used in maths formulas.
- Used mainly for headings and descriptions.

Exam Definition (Learn this):

Label: Text entered in a spreadsheet cell to describe data; it cannot be used in calculations.

Value

Definition: A value is numeric data (a number) entered in a cell that can be used in calculations.

Simple Explanation: Values are the actual numbers we want the computer to add, subtract, or otherwise calculate. Values are usually aligned to the right of a cell.

Example: The marks 85, 90, 76 entered under a "Marks" column are values.

Key Points:

- Values are automatically right-aligned in a cell.
- Values can be whole numbers or decimals.

- Used directly inside formulas for calculation.

Exam Definition (Learn this):

Value: A numeric entry in a spreadsheet cell that can be used for mathematical calculations.

Formula

Definition: A formula is an instruction typed into a cell, always starting with an equal sign (=), that tells the spreadsheet to perform a calculation.

Simple Explanation: A formula is like a mini calculation recipe. Instead of writing the answer ourselves, we write the recipe and the spreadsheet cooks up (calculates) the result automatically.

Example: Typing =25+15 in a cell shows the result 40. Typing =B2+B3 adds whatever numbers are in cells B2 and B3.

Key Points:

- Every formula must begin with the equal sign (=).
- A formula can use plain numbers, cell addresses, or both.
- If the value in a referenced cell changes, the formula's result updates automatically.

Exam Definition (Learn this):

Formula: An expression beginning with an equal sign (=) used in a cell to perform a calculation on values or cell references.

Comparison Table: Label vs Value vs Formula

Feature	Label	Value	Formula
What it holds	Text	Number	Calculation starting with =
Alignment (default)	Left	Right	Right (shows result)
Used in maths?	No	Yes	Yes (it performs the maths)
Example	"Total"	500	=B2+B3

2.3 Formula — How to Enter a Formula

Steps to enter a formula in a spreadsheet cell:

6. Click on the cell where you want the result to appear.
7. Type the equal sign (=) first — this tells the spreadsheet that a formula is coming.
8. Type the calculation using numbers, cell addresses, and operators (for example, A2+B2).
9. Press the Enter key.
10. The cell now displays the calculated result, not the formula text itself (the formula can still be seen in the Formula Bar).

Example:

To add the marks in cells B2 and C2, click on cell D2 and type =B2+C2, then press Enter. D2 will show the sum of B2 and C2.

2.4 Mathematical Operators Used in Formulae

Operator	Meaning	Example Formula	Result Meaning
+	Addition	=A2+B2	Adds the values in A2 and B2
-	Subtraction	=A2-B2	Subtracts B2 from A2

Operator	Meaning	Example Formula	Result Meaning
*	Multiplication	=A2*B2	Multiplies A2 by B2
/	Division	=A2/B2	Divides A2 by B2
^	Exponent (Power)	=A2^2	Raises A2 to the power of 2

Key Point:

Operators follow the standard order of maths (BODMAS/PEMDAS): brackets first, then power, then multiplication/division, then addition/subtraction.

2.5 Simple Calculations Using Values

We can perform calculations directly using plain numbers instead of cell addresses. This is useful for quick, one-time sums.

Example:

Typing =50+30 in a cell shows 80. Typing =200/4 shows 50. These are called simple or direct value calculations because actual numbers are typed instead of cell addresses.

Key Point: Value-based formulas are quick, but if the numbers change, we must edit the formula manually since it is not linked to any cell.

2.6 Formulae with Cell Addresses and Operators

Instead of typing plain numbers, we can type cell addresses in a formula. This is more powerful because if the data in the cell changes, the result updates automatically.

Example — Shop Bill:

If cell B2 holds the price of an item (50) and cell C2 holds the quantity (4), then the formula =B2*C2 in cell D2 calculates the total bill (200) automatically. If the price in B2 is changed to 60, D2 instantly updates to 240.

Key Point: Formulas using cell addresses are called cell-reference formulas and are the most commonly used type in real spreadsheets.

2.7 Commonly Used Basic Functions in a Spreadsheet

A function is a ready-made formula built into the spreadsheet that performs a specific calculation. Instead of writing long formulas, we simply use the function name followed by the cell range in brackets.

Function

Definition: A function is a predefined (ready-made) formula in a spreadsheet that performs a specific calculation automatically when we give it the required data (arguments).

Simple Explanation: Functions save time. Instead of typing =B2+B3+B4+B5+B6, we can simply type =SUM(B2:B6) to get the same answer faster.

Example: =SUM(C2:C10) adds all the numbers from cell C2 to C10.

Key Points:

- Every function starts with an equal sign (=) followed by the function name.
- The data given to a function (like a cell range) is called its argument, written inside round brackets ().
- Functions reduce typing and reduce mistakes in long formulas.

Exam Definition (Learn this):

Function: A built-in, ready-made formula in a spreadsheet used to perform a specific calculation on a given range of cells.

Function	Purpose	Example Formula	What It Does
SUM	Adds all numbers in a range	=SUM(B2:B10)	Gives the total of B2 to B10
AVERAGE	Finds the mean (average) of a range	=AVERAGE(B2:B10)	Gives the average marks of B2 to B10
MAX	Finds the largest (maximum) value in a range	=MAX(B2:B10)	Gives the highest value in B2 to B10
MIN	Finds the smallest (minimum) value in a range	=MIN(B2:B10)	Gives the lowest value in B2 to B10
COUNT	Counts how many cells in a range contain numbers	=COUNT(B2:B10)	Gives how many number entries exist in B2 to B10

2.8 Use of Functions to Do Calculations

Functions are typically used on a column or row of similar data, such as a list of marks, fees, or sales figures.

Example — Class Attendance Register:

If column B (rows 2 to 31) holds the number of days each of 30 students was present, then: =SUM(B2:B31) gives total attendance of the class; =AVERAGE(B2:B31) gives the average attendance; =MAX(B2:B31) shows the highest attendance; =MIN(B2:B31) shows the lowest attendance; =COUNT(B2:B31) shows how many students have an attendance value recorded.

Topic 2 – Key Points (Recap)

- Data can be a Label (text), Value (number), or Formula (calculation starting with =).
- Every formula begins with an equal sign (=).
- Mathematical operators used: + (add), - (subtract), * (multiply), / (divide), ^ (power).
- Formulas can use plain values or cell addresses; cell-address formulas update automatically.
- Functions (SUM, AVERAGE, MAX, MIN, COUNT) are ready-made formulas that work on a range of cells.

Topic 3: Format Data in the Spreadsheet

3.1 Formatting Tool

Formatting

Definition: Formatting means changing the appearance of data in a spreadsheet (such as its style, colour, number of decimals, or alignment) without changing the actual value stored in the cell.

Simple Explanation: Formatting is like dressing up the data neatly for presentation — the number underneath stays exactly the same, but it looks clearer and more attractive.

Example: Changing 1000 to show as ₹1,000.00 is formatting — the stored value is still 1000, only its display changes.

Key Points:

- Formatting changes only the display/appearance, never the real stored value.
- Formatting can be applied to a single cell or to a whole range at once.
- Common formatting options are found in the toolbar and in the Format Cells dialog box.

Exam Definition (Learn this):

Formatting: The process of changing how data appears in a spreadsheet (style, colour, decimals, alignment) without changing its actual stored value.

3.2 Use of Dialog Boxes to Format Values

A dialog box is a small window that pops up on the screen offering several formatting choices together. To format values using a dialog box:

11. Select the cell or range of cells to be formatted.
12. Go to the Format menu and click Cells (or right-click and choose Format Cells).
13. The Format Cells dialog box opens, showing tabs like Numbers, Alignment, Font, Borders.
14. Choose the required category (for example, Number, Date, Time) and the desired options.
15. Click OK to apply the formatting.

3.3 Formatting a Range of Cells with Decimal Places

Decimal Place Formatting

Definition: This formatting controls how many digits are shown after the decimal point in a number.

Simple Explanation: Money and marks often need a fixed number of digits after the point for neatness, such as always showing 2 digits after the decimal for rupees and paise.

Example: The value 45.6789 can be formatted to show only 2 decimal places as 45.68.

Key Points:

- Increasing decimal places shows more precise (detailed) numbers.
- Decreasing decimal places rounds the number for a cleaner look.
- This is set from the Numbers tab in the Format Cells dialog box.

Exam Definition (Learn this):

Decimal Formatting: Setting the fixed number of digits displayed after the decimal point in a numeric value.

3.4 Formatting a Range of Cells to be Seen as Labels

Sometimes we want a spreadsheet to treat numbers as plain text (labels) instead of numbers — for example, a mobile number, a roll number, or a PIN code should not be used in calculations and should not lose leading zeros.

Example:

A roll number like 007 typed normally becomes 7 (the leading zeros are lost) because the spreadsheet treats it as a number. Formatting the cell as Text before typing keeps it exactly as 007.

Key Point: Formatting a range as Text/Label stops the spreadsheet from performing calculations on that data and preserves the exact digits typed.

3.5 Formatting of a Cell Range as Scientific

Scientific Format

Definition: Scientific format displays very large or very small numbers in a short, standard scientific form using a power of 10.

Simple Explanation: Instead of writing a huge number with many zeros, scientific format shows it briefly, like 1500000 becoming 1.5E+06 (which means 1.5×10 to the power 6).

Example: The number 1,500,000 formatted as scientific appears as 1.50E+06.

Key Points:

- Useful for very large numbers (e.g., population, distance in km) or very small numbers.
- "E+06" means multiply by 10 raised to the power 6.
- Chosen from the Numbers tab of the Format Cells dialog box.

Exam Definition (Learn this):

Scientific Format: A way of displaying very large or very small numbers using powers of ten, shown with an 'E' followed by the exponent.

3.6 Formatting a Range of Cells to Display Times

Time formatting displays a value as a time (hours, minutes, seconds) instead of a plain number.

Example:

A school attendance/arrival sheet can format a column to display entries as time, such as 08:30 AM, so it is clear that the number represents a time and not a plain quantity.

Key Point: Time format is chosen under the Time category in the Format Cells dialog box, with different display styles such as HH:MM or HH:MM:SS.

3.7 Formatting Alignment of a Cell Range

Alignment

Definition: Alignment formatting controls the horizontal and vertical position of data inside a cell, such as left, right, centre, top, or bottom.

Simple Explanation: Alignment is simply about neatly placing text inside its box — like centring a heading so it looks balanced on the page.

Example: Column headings such as "Name", "Marks", "Grade" are often centre-aligned to look neat above the data.

Key Points:

- Horizontal alignment options: Left, Centre, Right.
- Vertical alignment options: Top, Middle, Bottom.
- By default, text (labels) aligns left and numbers (values) align right.

Exam Definition (Learn this):

Alignment: The positioning of data within a cell, such as left, centre, right, top, middle, or bottom.

3.8 Speeding Up Data Entry Using the Fill Handle

Fill Handle

Definition: The fill handle is a small solid square found at the bottom-right corner of a selected cell or range, which can be dragged to quickly copy data or continue a pattern into neighbouring cells.

Simple Explanation: Instead of typing the same value or the next number in a series again and again, we simply click and drag this tiny square, and the spreadsheet fills the cells for us.

Example: Typing 'Monday' in a cell and dragging the fill handle across six more cells automatically fills Tuesday, Wednesday, Thursday, and so on.

Key Points:

- Appears as a small square at the bottom-right corner of the selected cell.
- Can fill a simple copy (same value) or continue a series (numbers, dates, days).
- Saves a lot of time when entering repeated or sequential data.

Exam Definition (Learn this):

Fill Handle: A small square at the bottom-right corner of a selected cell, used by dragging to quickly copy or continue a series of data into adjacent cells.

3.9 Use of Fill Handle to Copy Formulae

The fill handle is also used to copy a formula from one cell into many other cells in a row or column, without typing the formula again and again.

Example — Total Marks for Many Students:

If cell D2 has the formula $=B2+C2$ to calculate one student's total, dragging the fill handle from D2 down to D20 automatically creates $=B3+C3$ in D3, $=B4+C4$ in D4, and so on for every student, saving a lot of time.

Key Point: When a formula is copied using the fill handle, the cell addresses inside it automatically adjust for each new row — this behaviour is called relative referencing (explained in the next topic).

Topic 3 – Key Points (Recap)

- Formatting changes appearance only; it never changes the actual stored value.
- The Format Cells dialog box provides options like Number, Text, Scientific, Time, and Alignment.
- Decimal formatting sets how many digits appear after the decimal point.
- Formatting as Text/Label preserves leading zeros and stops calculations on that data.
- Scientific format shows very large/small numbers using 'E' and a power of ten.
- Alignment sets the position of data inside a cell (left, right, centre, top, middle, bottom).
- The fill handle (small square at bottom-right of a cell) quickly copies data, continues series, or copies formulas.

Topic 4: Understand and Apply Referencing

4.1 Concept of Referencing

Referencing

Definition: Referencing means using a cell's address inside a formula instead of typing its actual value directly, so that the formula automatically uses whatever value is currently in that cell.

Simple Explanation: Referencing lets a formula 'point to' a cell rather than a fixed number. If the data in the referenced cell changes, the formula result changes too — automatically.

Example: Instead of typing $=50+30$, we type $=A1+A2$, where A1 contains 50 and A2 contains 30. If A1 is later changed to 70, the answer updates by itself.

Key Points:

- Referencing makes formulas dynamic (able to update automatically).
- There are three types of referencing: Relative, Mixed, and Absolute.
- Referencing becomes especially important when a formula is copied to other cells using the fill handle.

Exam Definition (Learn this):

Referencing: The use of a cell's address within a formula so that the formula uses the value stored in that cell rather than a fixed number.

4.2 Relative Referencing

Relative Referencing

Definition: Relative referencing is a type of cell reference that automatically changes (adjusts) when a formula is copied to another cell, based on its relative position.

Simple Explanation: It is called 'relative' because the reference is relative to (depends on) the position of the cell holding the formula — it shifts by the same number of rows/columns as the copy.

Example: If cell C2 has the formula $=A2+B2$ and is copied down to C3, the formula automatically becomes $=A3+B3$.

Key Points:

- This is the default type of referencing in a spreadsheet.
- Written simply as the column letter and row number, e.g., A2, B5.
- Best used when the same calculation must be repeated for many rows/columns, such as totals for every student.

Exam Definition (Learn this):

Relative Reference: A cell reference that automatically adjusts to match its new position when the formula is copied to another cell.

4.3 Absolute Referencing

Absolute Referencing

Definition: Absolute referencing is a type of cell reference that does NOT change at all when a formula is copied to other cells — it always points to the exact same fixed cell.

Simple Explanation: A dollar sign (\$) is placed before the column letter and before the row number to 'lock' the reference completely, like fixing it firmly in place.

Example: If cell B2 always holds a fixed GST rate, and D2 has the formula =C2*\$B\$2, then copying it down to D3, D4... will still always refer to B2 (never B3, B4).

Key Points:

- Written with a dollar sign before both the column and row, e.g., \$B\$2.
- Used when a formula must always refer to one fixed cell, such as a tax rate, discount rate, or a constant value.
- Does not change even after copying to any number of cells.

Exam Definition (Learn this):

Absolute Reference: A cell reference that remains fixed and unchanged when a formula is copied, shown using a dollar sign before both the column and row (e.g., \$B\$2).

4.4 Mixed Referencing

Mixed Referencing

Definition: Mixed referencing is a type of cell reference where only the column OR only the row is fixed (locked) with a dollar sign, while the other part changes when copied.

Simple Explanation: It is a 'mix' of relative and absolute — half of the address is locked, and half moves freely, giving us more flexible control.

Example: In \$A2, the column A is locked but the row number 2 can change when copied down. In A\$2, the row 2 is locked but the column letter A can change when copied across.

Key Points:

- Two forms: Column locked, row relative (e.g., \$A2), OR row locked, column relative (e.g., A\$2).
- The dollar sign (\$) is placed only before the part that should stay fixed.
- Useful in tables where one row or one column must stay fixed while the formula is copied in the other direction, such as a multiplication table.

Exam Definition (Learn this):

Mixed Reference: A cell reference in which either the column or the row is fixed using a dollar sign, while the other part changes when the formula is copied.

Comparison Table: Relative vs Mixed vs Absolute Referencing

Feature	Relative Reference	Mixed Reference	Absolute Reference
Symbol used	No dollar sign	One dollar sign (\$) before column OR row)	Two dollar signs (\$) before column AND row)
Example	A2	\$A2 or A\$2	\$A\$2
What changes on copy	Both column and row adjust	Only the unlocked part adjusts	Nothing changes — stays fixed
Best used for	Repeating the same type of calculation for each row (e.g., totals)	Tables needing one fixed row or column (e.g., multiplication tables)	A constant value used by every formula (e.g., tax rate, discount)

Topic 4 – Key Points (Recap)

- Referencing means using a cell address in a formula so it updates automatically with the cell's value.
- Relative reference (A2): both column and row shift when copied — the default type.
- Absolute reference (\$A\$2): both column and row stay completely fixed when copied.
- Mixed reference (\$A2 or A\$2): only one part (column or row) stays fixed; the other shifts.

Topic 5: Create and Insert Charts in a Spreadsheet

5.1 Importance of Chart in Spreadsheet

Chart

Definition: A chart is a visual (picture) representation of numeric data from a spreadsheet, used to show information in an easy-to-understand graphical form.

Simple Explanation: Rows and columns full of numbers can be hard to understand at a glance. A chart turns those numbers into pictures (bars, lines, slices) so that comparisons and trends become instantly visible.

Example: A bar chart showing the marks of 5 subjects makes it instantly clear which subject has the highest and lowest marks, without reading every number.

Key Points:

- Charts make data easier and faster to understand.
- Charts help compare values and spot trends or patterns quickly.
- A chart is automatically linked to its data — if the data changes, the chart updates too.

Exam Definition (Learn this):

Chart: A visual/graphical representation of numerical spreadsheet data, used to make data easier to read, compare, and understand.

5.2 Types of Chart

Different chart types are suitable for different kinds of data. Here are the common chart types used in a spreadsheet:

Chart Type	Best Used For	Simple Example
Bar Chart / Column Chart	Comparing values across different categories using horizontal or vertical bars.	Comparing marks of 5 students in Maths.

Chart Type	Best Used For	Simple Example
Line Chart	Showing how a value changes over a period of time (a trend).	Showing a student's monthly attendance over a year.
Pie Chart	Showing each part's share as a percentage (slice) of one whole total.	Showing the percentage of marks scored in each subject out of total marks.
Area Chart	Showing trends over time while also emphasising the total volume/size, using a filled area below the line.	Showing total sales of a shop over several months.

Simple Diagram — How Chart Types Look

Bar Chart: separate vertical bars of different heights standing side by side, like:  — taller bar = bigger value.

Line Chart: points joined by a continuous line moving up and down across the page, like a heartbeat/mountain-range shape, showing change over time.

Pie Chart: a full circle divided into different-sized slices, like a round pizza cut into unequal pieces, where each slice is a percentage of the whole.

Comparison Table: Bar vs Line vs Pie Chart

Feature	Bar/Column Chart	Line Chart	Pie Chart
Shape	Separate rectangular bars	Connected line with points	Circle divided into slices
Shows	Comparison between categories	Change/trend over time	Share of a whole (percentage)
Best example	Marks of different students	Attendance over 12 months	Percentage of marks by subject

Topic 5 – Key Points (Recap)

- A chart is a graphical picture of numeric spreadsheet data, making it easier to read and compare.
- Common chart types: Bar/Column chart, Line chart, Pie chart, and Area chart.
- Bar charts compare categories; line charts show trends over time; pie charts show percentage share of a whole.
- A chart automatically updates when the underlying spreadsheet data is changed.

Quick Revision : Electronic Spreadsheet

- Spreadsheet application: stores, organises and calculates data in rows/columns (e.g., LibreOffice Calc).
- Workbook = the whole file; Worksheet = one page/sheet inside the workbook; Cell = box where a row and column meet.
- Cell Address = column letter + row number (e.g., B3). Active cell = currently selected cell.
- Range = adjacent cells written as First Cell : Last Cell — column range, row range, or block (row-and-column) range.
- Data types: Label (text), Value (number), Formula (starts with =).
- Formula always starts with =. Operators: + (add), - (subtract), * (multiply), / (divide), ^ (power).
- Functions: SUM (total), AVERAGE (mean), MAX (largest), MIN (smallest), COUNT (counts numeric entries).

- Formatting changes only appearance (decimals, text/label, scientific, time, alignment), never the real stored value.
- Fill handle = small square at bottom-right of a cell, used to copy data/patterns/formulas quickly by dragging.
- Referencing = using a cell address in a formula instead of a fixed number.
- Relative reference (A2): both column & row change when copied — default type.
- Absolute reference (\$A\$2): both column & row stay fixed when copied.
- Mixed reference (\$A2 or A\$2): only column OR only row stays fixed when copied.
- Chart = graphical picture of spreadsheet data, updates automatically when data changes.
- Chart types: Bar/Column (compare categories), Line (show trend over time), Pie (show % share of a whole), Area (trend + volume).

Chapter / Topic Summaries

Topic 1: Create a Spreadsheet

This topic introduces the spreadsheet application and how to start it. It explains the different parts of the spreadsheet screen (title bar, formula bar, name box, column/row headers, sheet tabs). It defines a worksheet as one page of rows and columns inside a workbook, explains that a cell is formed by a row-column intersection with an address like B3, and explains a range as a group of adjacent cells (column range, row range, or block range) used together.

Topic 2: Apply Formula and Functions in Spreadsheet

This topic covers the three types of data a cell can hold — Label (text), Value (number), and Formula (a calculation starting with =). It explains how to enter a formula, the five basic mathematical operators (+, -, *, /, ^), and shows how formulas can use plain values or cell addresses. It also introduces five basic functions — SUM, AVERAGE, MAX, MIN, COUNT — as ready-made formulas that quickly calculate results over a range of cells.

Topic 3: Format Data in the Spreadsheet

This topic explains formatting as changing the display of data without changing its actual value. It covers the Format Cells dialog box and its options: decimal places, formatting a range as text/labels (to keep leading zeros), scientific format for very large/small numbers, time format, and alignment (left/right/centre, top/middle/bottom). It also explains the fill handle — a small square used to quickly copy data, continue a series, or copy formulas across cells.

Topic 4: Understand and Apply Referencing

This topic explains referencing as using a cell's address in a formula so the formula automatically uses the value in that cell. It covers three types: Relative referencing (A2, changes when copied), Absolute referencing (\$A\$2, stays fixed when copied), and Mixed referencing (\$A2 or A\$2, only part stays fixed). These are essential when copying formulas using the fill handle.

Topic 5: Create and Insert Charts in a Spreadsheet

This topic explains why charts are important — they turn numeric data into an easy-to-read visual/graphical form for quick comparison and understanding of trends. It covers the common chart types: Bar/Column chart (comparing categories), Line chart (showing trends over time), Pie chart (showing percentage share of a whole), and Area chart (trend with volume emphasis).

Important Questions and Answers

Very Short Answer Questions (1 Mark Each)

Q1. What is a spreadsheet application?

Ans: It is a computer program used to enter, organise, calculate and present data in rows and columns (e.g., LibreOffice Calc).

Q2. What is a workbook?

Ans: A workbook is the entire spreadsheet file, which can contain one or more worksheets.

Q3. What is a cell?

Ans: A cell is the small box formed where a row and a column meet in a worksheet.

Q4. What is a cell address?

Ans: A cell address is the name of a cell formed by its column letter followed by its row number, e.g., B3.

Q5. What is a range in a spreadsheet?

Ans: A range is a group of two or more adjacent cells, written as FirstCell:LastCell, e.g., A2:A10.

Q6. What symbol must every formula begin with?

Ans: Every formula must begin with the equal sign (=).

Q7. Name any two mathematical operators used in a formula.

Ans: Any two of: + (addition), - (subtraction), * (multiplication), / (division), ^ (power).

Q8. What does the SUM function do?

Ans: The SUM function adds all the numbers in a given range of cells.

Q9. What does the COUNT function do?

Ans: The COUNT function counts how many cells in a range contain numeric data.

Q10. What is formatting in a spreadsheet?

Ans: Formatting means changing the appearance of data (decimals, alignment, etc.) without changing its actual stored value.

Q11. What is the fill handle?

Ans: The fill handle is the small square at the bottom-right corner of a selected cell, used to quickly copy data or formulas.

Q12. What is referencing?

Ans: Referencing is the use of a cell's address in a formula so that the formula uses the value stored in that cell.

Q13. Give the symbol used for absolute referencing.

Ans: The dollar sign (\$), placed before both the column letter and the row number, e.g., \$A\$2.

Q14. What is a chart in a spreadsheet?

Ans: A chart is a graphical/visual representation of numeric spreadsheet data.

Q15. Name any two types of charts.

Ans: Any two of: Bar/Column chart, Line chart, Pie chart, Area chart.

Short Answer Questions (3 Marks Each)

Q1. Differentiate between a Label, a Value, and a Formula, with one example of each.

Ans: A Label is text used to describe data and cannot be calculated (e.g., "Name"). A Value is a number that can be used in calculations (e.g., 85). A Formula is an expression starting with = that calculates a result from values/cell references (e.g., =A2+B2).

Q2. Explain the three types of range with one example each.

Ans: Column range: adjacent cells in a single column, e.g., A2:A10. Row range: adjacent cells in a single row, e.g., B3:F3. Row-and-column (block) range: a rectangular group covering more than one row and column, e.g., B2:D6.

Q3. What is the difference between Relative and Absolute referencing?

Ans: Relative referencing (e.g., A2) automatically changes when a formula is copied to another cell. Absolute referencing (e.g., \$A\$2) does not change at all when a formula is copied — it always points to the same fixed cell.

Q4. Explain the use of the fill handle with an example.

Ans: The fill handle is the small square at the bottom-right of a selected cell. Dragging it copies data, continues a series (like days of the week), or copies a formula to other cells. For example, dragging a =B2+C2 formula in D2 down to D10 automatically creates similar formulas for each row.

Q5. Why are charts important in a spreadsheet? Give an example.

Ans: Charts convert numeric data into an easy-to-understand visual form, making comparison and trend-spotting faster. For example, a bar chart of five students' marks instantly shows who scored highest and lowest without reading each number.

Q6. Describe any three basic functions used in a spreadsheet.

Ans: SUM adds all numbers in a range, e.g., =SUM(B2:B10). AVERAGE finds the mean of a range, e.g., =AVERAGE(B2:B10). MAX finds the largest value in a range, e.g., =MAX(B2:B10).

Long Answer Questions (5 Marks Each)

Q1. Explain the different parts of a spreadsheet screen with their functions.

Ans: A spreadsheet screen has several parts: Title Bar (shows the file name), Menu Bar (list of command categories), Toolbar (quick-access buttons), Formula Bar (shows the content of the selected cell), Name Box (shows the address of the selected cell), Column Headers (letters A, B, C...), Row Headers (numbers 1, 2, 3...), Cell (box formed by a row and column), Sheet Tabs (names of worksheets at the bottom), and the Status Bar (shows quick summary information such as sum/average of a selection). Each part helps the user to view, navigate, and work with data efficiently.

Q2. Explain Relative, Mixed, and Absolute referencing with suitable examples.

Ans: Relative referencing (e.g., A2) is the default type; both the column and row automatically adjust when the formula is copied to a new cell — useful for repeating the same calculation across many rows, like a total column. Absolute referencing (e.g., \$A\$2) uses a dollar sign before both the column and row so that the reference never changes when copied — useful for a constant value like a fixed tax rate used by every row. Mixed referencing (e.g., \$A2 or A\$2) locks only the column or only the row with a dollar sign while the other part still adjusts — useful in tables such as a multiplication table where one row or column must remain fixed while the formula is copied in the other direction.

Q3. Explain the different types of charts with an example of when each should be used.

Ans: A Bar/Column chart uses separate bars to compare values across categories, such as comparing the marks of five students in one subject. A Line chart joins data points with a continuous line to show how a value changes over time, such as a student's attendance over twelve months. A Pie chart divides a circle into slices to show each part's percentage share of one whole total, such as the percentage of marks scored in each subject. An Area chart is similar to a line chart but fills the area below the line, useful for showing a trend while also emphasising total volume, such as monthly sales over a year.

Q4. Describe how formatting can be applied to a range of cells in a spreadsheet, mentioning at least four formatting options.

Ans: Formatting changes only how data looks, not its actual stored value. First, select the required range of cells, then open the Format Cells dialog box (via the Format menu or right-click). Common formatting options include: (1) Decimal places — to fix how many digits appear after the decimal point; (2) Text/Label format — to keep numbers like roll numbers exactly as typed, including leading zeros; (3) Scientific format — to display very large or small numbers using powers of ten (e.g., 1.5E+06); (4) Time format — to display values as clock time (e.g., 08:30 AM); and (5) Alignment — to set the horizontal (left/centre/right) and vertical (top/middle/bottom) position of data within a cell. Clicking OK applies the chosen formatting to the entire selected range at once.

Technical Term	Simple English Meaning
Spreadsheet	An application to store and calculate data in rows and columns
Workbook	The entire spreadsheet file
Worksheet	A single page/sheet inside a workbook
Cell	Box formed by a row and column meeting point
Cell Address	Name of a cell, e.g., B3
Range	Group of adjacent cells
Label	Text data in a cell
Value	Numeric data in a cell
Formula	Expression starting with = to calculate
Function	Ready-made formula (e.g., SUM)
Operator	Symbol used for calculation (+, -, *, /, ^)
Formatting	Changing appearance of data
Decimal Places	Digits shown after the decimal point
Alignment	Position of data in a cell
Fill Handle	Small square used to copy/drag data
Referencing	Using a cell address in a formula
Relative Reference	Reference that changes when copied
Absolute Reference	Reference that stays fixed when copied
Mixed Reference	Reference where only column or row is fixed
Chart	Graphical picture of spreadsheet data
Bar Chart	Chart using bars to compare data
Line Chart	Chart showing trend using a line
Pie Chart	Circular chart showing percentage share

One-Page Revision Sheet

Core Definitions

- Spreadsheet: application to store, organise and calculate data in rows/columns.
- Workbook = whole file; Worksheet = one page; Cell = row-column box; Cell Address = column letter + row number.
- Range: adjacent cells written as FirstCell>LastCell (column / row / block range).
- Label = text; Value = number; Formula = calculation starting with =.
- Function: ready-made formula, e.g., SUM, AVERAGE, MAX, MIN, COUNT.
- Formatting: changes appearance only, not the actual stored value.
- Fill Handle: small square at bottom-right of a cell; drag to copy/continue data or formulas.
- Referencing: using a cell address inside a formula.

Operators

+ Addition - Subtraction * Multiplication / Division ^ Power

Basic Functions

Function	Formula Example	Purpose
SUM	=SUM(B2:B10)	Total of the range
AVERAGE	=AVERAGE(B2:B10)	Mean of the range
MAX	=MAX(B2:B10)	Largest value
MIN	=MIN(B2:B10)	Smallest value
COUNT	=COUNT(B2:B10)	Count of numeric cells

Referencing Types

Type	Example	Behaviour on Copy
Relative	A2	Both column & row change
Mixed	\$A2 or A\$2	Only one part changes
Absolute	\$A\$2	Nothing changes (fixed)

Chart Types

Chart	Used For
Bar/Column	Comparing values across categories
Line	Showing trend over time
Pie	Showing percentage share of a whole
Area	Trend over time with volume emphasis

Remember:

Formula = starts with =. Function = ready-made formula. Formatting ≠ changing the value. Fill Handle = drag to copy. \$ before column/row = locks that part when copying.