G.C.E. O/L Grade 10 ICT

Lesson 7: Spreadsheets

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7.1 Spreadsheet Software: Features, Uses and the GUI

An **electronic spreadsheet** is application software that stores data in a grid of **rows and columns** and does calculations automatically. When a number changes, every formula that uses it is **recalculated** at once. In this note you will learn what spreadsheets are used for, name popular programs (**MS Excel, LibreOffice Calc, Google Sheets**) and identify the parts of the window: **ribbon, Name Box, formula bar, column and row headings, cells, active cell, sheet tabs and status bar**.

1. What is a spreadsheet?

A paper spreadsheet is a large sheet ruled into rows and columns, used by accountants. An **electronic spreadsheet** does the same on a computer, but it can **calculate, sort, draw charts and recalculate automatically**. One file is called a **workbook**; each page inside it is a **worksheet** (sheet).

MS Excel
Part of Microsoft 365; file type .xlsx.

LibreOffice Calc
Free and open source; file type .ods.

Google Sheets
Free, runs in a web browser and saves to Google Drive.

Excel for the web
Online Excel in a browser, saved to OneDrive.

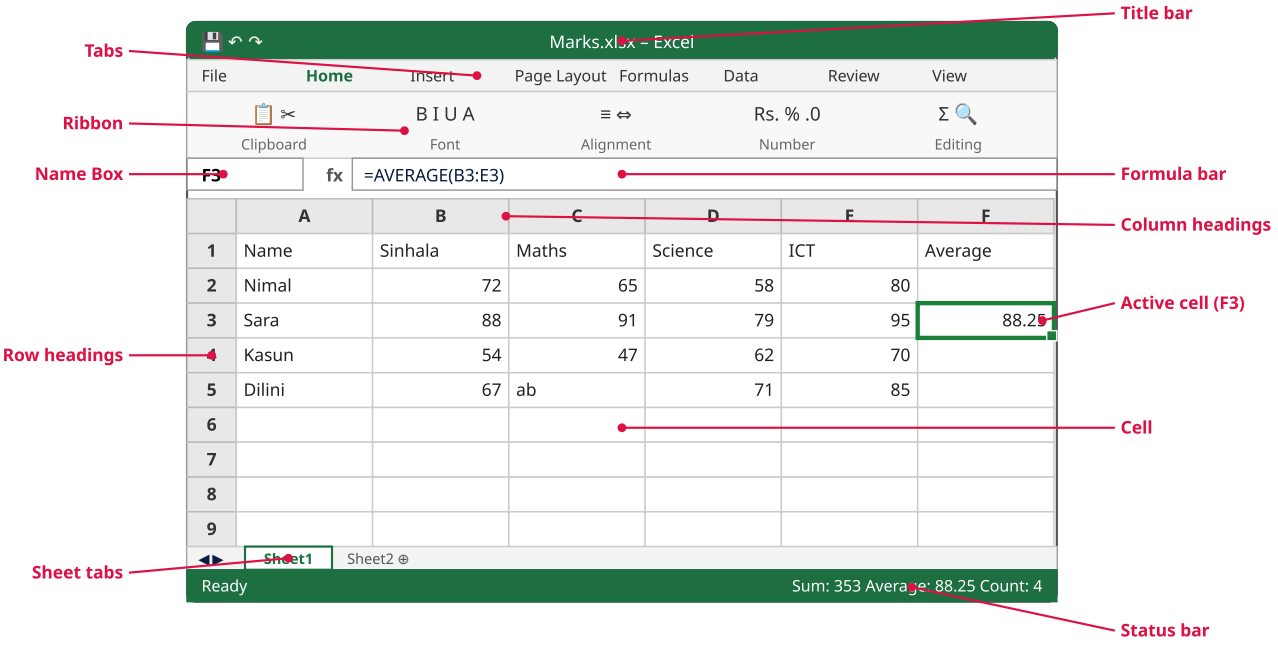
2. Functions (uses) of a spreadsheet

- **Calculations** with formulas and functions, e.g. totals and averages of marks.
- **Automatic recalculation** when data changes.
- **Charts** (column, bar, line, pie) to show data as pictures.
- **Sorting and filtering** lists, e.g. rank students by total.
- **Simple statistics**: SUM, AVERAGE, MAX, MIN, COUNT.
- **Storing and formatting** tables: shop bills in Rs., attendance, rainfall records.

Use	Sri Lankan example
School	Term test mark sheet, averages and class rank
Shop	Bill: Qty × Price in Rs., total and discount
Weather	Monthly rainfall in Colombo in mm, with a chart
Home	Electricity units and family budget

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3. The spreadsheet window (GUI)



Excel window. F3 is the active cell; its formula is shown in the formula bar and its address in the Name Box. The status bar shows Sum 353, Average 88.25 and Count 4 for the selected cells B3:E3.

Part	What it does
Title bar	Shows the workbook name, e.g. Marks.xlsx
Ribbon and tabs	Commands in tabs (Home, Insert, Formulas, Data…) and groups
Name Box	Shows the address of the active cell (F3); type an address to jump to it
Formula bar (fx)	Shows and edits the content or formula of the active cell
Column headings	Letters A, B, C… at the top
Row headings	Numbers 1, 2, 3… on the left
Cell / active cell	Box where a row and a column meet; the active cell has a thick border
Sheet tabs	Switch between worksheets; ⊕ adds a new sheet
Status bar	Shows Ready/Enter mode and quick Sum, Average, Count of the selection

> 💡 In LibreOffice Calc the Name Box is called the **Name Box** too, and the formula bar has **Σ** and **=** buttons. Google Sheets shows the active cell address at the left of the **fx** bar.

4. 2026 update: cloud, co-authoring and AI

> NEW 2026 **Co-authoring:** in Google Sheets and Excel for the web several students can edit the same sheet at once; coloured cursors show who is where, and **Version history** brings back older copies.

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NEW 2026 **Copilot in Excel / Analyze Data / Explore in Sheets** can suggest formulas and charts. Use them responsibly: **check every answer with your own formula**, never paste private data (NIC numbers, phone numbers, marks of others) and say when AI helped.

Key Words

Spreadsheet – Software that stores data in rows and columns and calculates.

Workbook – A spreadsheet file containing one or more worksheets.

Worksheet – One sheet (page) of rows and columns in a workbook.

Ribbon – Band of tabs and command groups at the top.

Name Box – Box showing the address of the active cell.

Formula bar – Bar that shows and edits the content of the active cell.

Column heading – Letter at the top of a column (A, B, C…).

Row heading – Number at the left of a row (1, 2, 3…).

Active cell – The selected cell with a thick border, ready for input.

Sheet tab – Tab at the bottom used to switch worksheets.

Status bar – Bottom bar showing mode and quick Sum/Average/Count.

Co-authoring – Several people editing the same online sheet at once.

Sample Q&A

1. What is an electronic spreadsheet?

Answer: Application software that stores data in rows and columns and performs calculations automatically.

2. Name three spreadsheet programs.

Answer: MS Excel, LibreOffice Calc, Google Sheets.

3. What is the difference between a workbook and a worksheet?

Answer: A workbook is the whole file; a worksheet is one sheet inside it.

4. What does the Name Box show?

Answer: The address of the active cell, e.g. F3.

5. Give two functions of a spreadsheet.

Answer: Any two: calculations, automatic recalculation, charts, sorting/filtering, statistics.

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6. What should you do before using a Copilot-suggested formula?

> **Answer:** Check it gives the right answer with a simple test, and do not share private data.

MCQ

1. Which of these is a spreadsheet program?

A. LibreOffice Calc
B. LibreOffice Writer
C. MS PowerPoint
D. Google Docs

2. A spreadsheet file is called a…

A. Ribbon
B. Cell
C. Workbook
D. Worksheet

3. The box that shows the address of the active cell is the…

A. Formula bar
B. Title bar
C. Name Box
D. Status bar

4. The formula of the active cell is shown in the…

A. Formula bar
B. Row heading
C. Name Box
D. Sheet tab

5. Column headings in a worksheet are…

A. Numbers 1, 2, 3…
B. Letters A, B, C…
C. Sheet names
D. Roman numerals

6. Row headings are…

A. Function names
B. Colours
C. Letters A, B, C…
D. Numbers 1, 2, 3…

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7. Selecting B3:E3 (values 88, 91, 79, 95), the status bar Sum shows…

A. 95
B. 88
C. 353
D. 4

8. Sheet tabs are used to…

A. Change font
B. Move between worksheets
C. Zoom
D. Print

9. The default file type of LibreOffice Calc is…

A. .ods
B. .docx
C. .odt
D. .xlsx

10. MS Excel saves workbooks as…

A. .txt
B. .pptx
C. .xlsx
D. .ods

11. When a value changes, formulas that use it…

A. Are deleted
B. Become text
C. Must be typed again
D. Recalculate automatically

12. Which is NOT a usual function of a spreadsheet?

A. Editing video
B. Calculating averages
C. Sorting data
D. Drawing charts

13. Several students editing one Google Sheet at the same time is…

A. Mail Merge
B. Co-authoring
C. AutoFill
D. Printing

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14. Responsible use of Copilot/Analyze Data means…

A. Copying answers without checking
B. Uploading classmates' NIC numbers
C. Turning off recalculation
D. Checking its formulas and keeping private data out

15. Google Sheets files are saved in…

A. The printer
B. Google Drive (cloud)
C. The status bar
D. A floppy disk

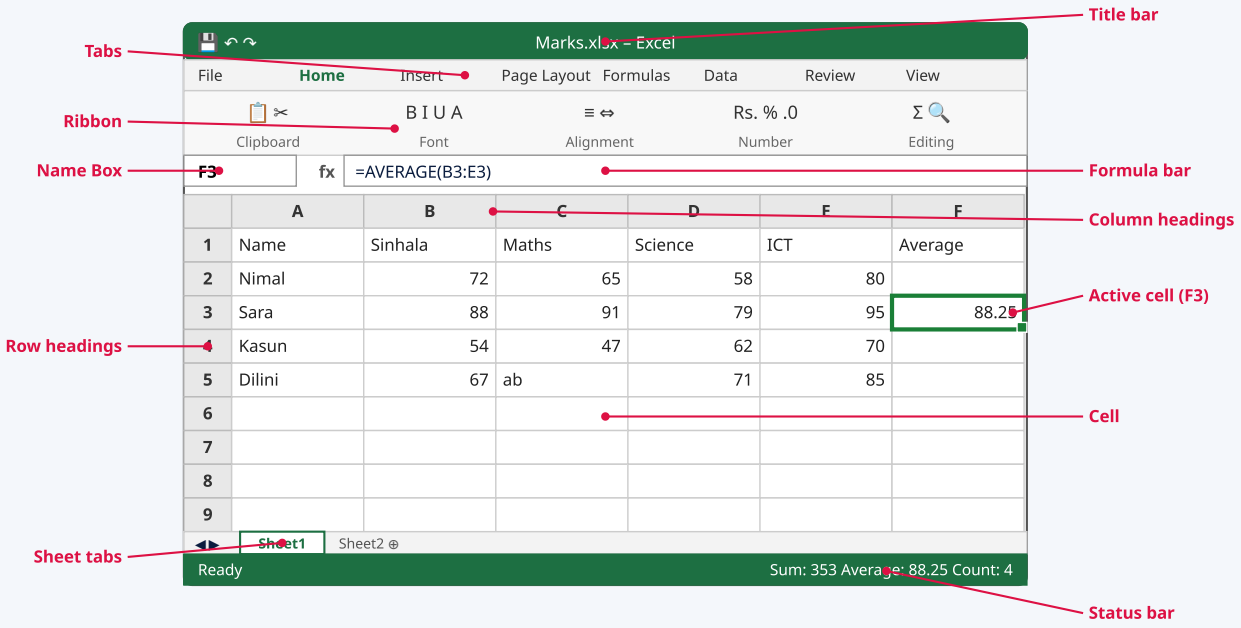
Structured Questions

1. (i) Define an electronic spreadsheet. (2 marks)
(ii) Name two spreadsheet programs. (2 marks) *(4 marks)*

> (i) Application software that stores data in rows and columns and calculates automatically. (ii) Any two: MS Excel, LibreOffice Calc, Google Sheets.

2. Label six parts of a spreadsheet window. *(6 marks)*

> Any six: title bar, ribbon/tabs, Name Box, formula bar, column headings, row headings, active cell, sheet tabs, status bar.



	A	B	C	D	E	F
1	Name	Sinhala	Maths	Science	ICT	Average
2	Nimal	72	65	58	80	
3	Sara	88	91	79	95	88.25
4	Kasun	54	47	62	70	
5	Dilini	67	ab	71	85	
6						
7						
8						
9						

Model answer: labelled spreadsheet window.

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3. State the difference between the Name Box and the formula bar. *(2 marks)*

> Name Box shows the address of the active cell (F3); the formula bar shows its content/formula (=AVERAGE(B3:E3)).

4. Give three uses of spreadsheets with a Sri Lankan example for each. *(3 marks)*

> Mark sheets and averages in school; shop bills in Rs.; monthly rainfall records with charts.

5. Explain two advantages of co-authoring in Google Sheets and one rule for using AI tools. *(3 marks)*

> Many can edit at once; changes are saved and version history restores old copies. Rule: check AI formulas yourself / do not enter private data.

Summary

- A spreadsheet stores data in rows and columns and calculates.
- Programs: MS Excel (.xlsx), LibreOffice Calc (.ods), Google Sheets.
- Workbook = file; worksheet = one sheet.
- Uses: calculations, recalculation, charts, sorting, statistics.
- Name Box = address; formula bar = content of the active cell.
- Columns are letters; rows are numbers.
- Sheet tabs switch sheets; the status bar shows quick Sum/Average/Count.
- Co-author online; use Copilot/Analyze Data responsibly.

MCQ answer key – 7.1

1. **A** – Calc is the spreadsheet.
2. **C** – File = workbook.
3. **C** – Name Box.
4. **A** – fx bar.
5. **B** – Columns = letters.
6. **D** – Rows = numbers.
7. **C** – 88+91+79+95 = 353.
8. **B** – Bottom tabs.
9. **A** – OpenDocument Spreadsheet.
10. **C** – .xlsx.
11. **D** – Automatic recalculation.
12. **A** – Video is not a spreadsheet job.
13. **B** – Co-authoring.
14. **D** – Check and protect privacy.
15. **B** – Cloud storage.

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7.2 The Worksheet: Cells, Rows, Columns and Data Entry

A worksheet is a grid. **Columns** go down and are named by letters; **rows** go across and are numbered. Where a column and a row meet is a **cell**, named by its **cell address** such as **C4**. A block of cells is a **range** such as **A1:C5**. In this note you will move around a sheet quickly, enter **labels, numbers and formulae**, edit with **F2** and the formula bar, and copy data with the **fill handle** and **AutoFill**.

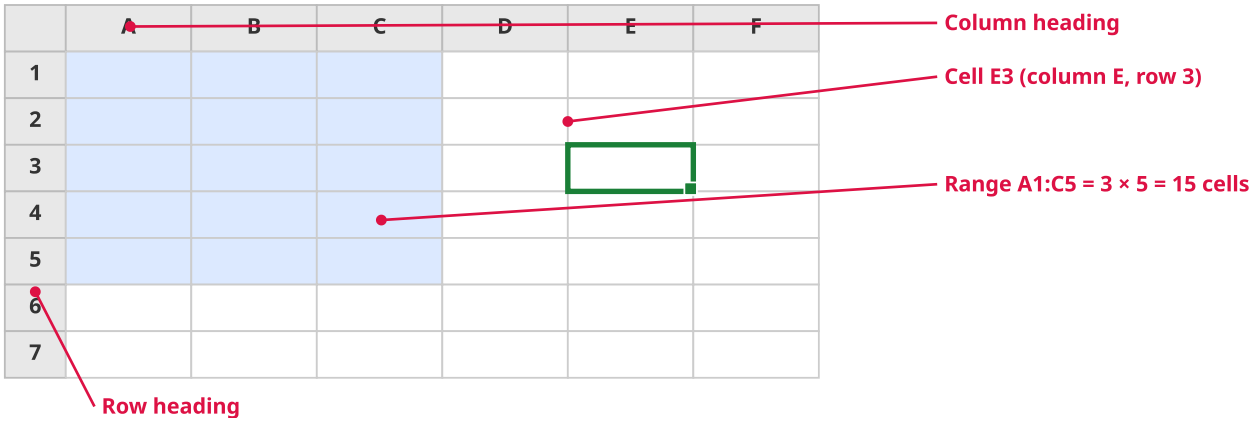
1. Columns, rows, cells and addresses

Column
Vertical; named A, B, … Z, AA, AB …

Row
Horizontal; numbered 1, 2, 3 …

Cell address
Column letter first, then row number: E3, B12.

Range
First cell : last cell, e.g. A1:C5.



Cell E3 is in column E, row 3. The range A1:C5 has 3 columns × 5 rows = 15 cells.

Counting cells in a range: **columns × rows**. B2:D5 has 3 columns (B, C, D) × 4 rows (2–5) = **12** cells. A1:D5 has 4 × 5 = **20** cells. A range in one column, e.g. **B2:B6**, has 5 cells.

2. Moving around the worksheet

Key	Moves to
Arrow keys ← → ↑ ↓	One cell in that direction
Tab / Shift+Tab	One cell right / left
Enter / Shift+Enter	One cell down / up (after typing)
Ctrl+Home	Cell A1

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Ctrl+End	Last used cell
Ctrl+arrow	Edge of the data block in that direction
Page Up / Page Down	One screen up / down
Name Box or Ctrl+G / F5 (Go To)	Type an address such as K250 and press Enter

3. Data entry: labels, numbers and formulae

Type	Example	Notes
Label (text)	Name, Sinhala, Nimal	Left-aligned by default; not used in sums
Number (value)	72, 3.5, 120	Right-aligned by default; can be calculated
Formula	=B2+C2, =SUM(B2:E2)	Always starts with = ; the cell shows the result

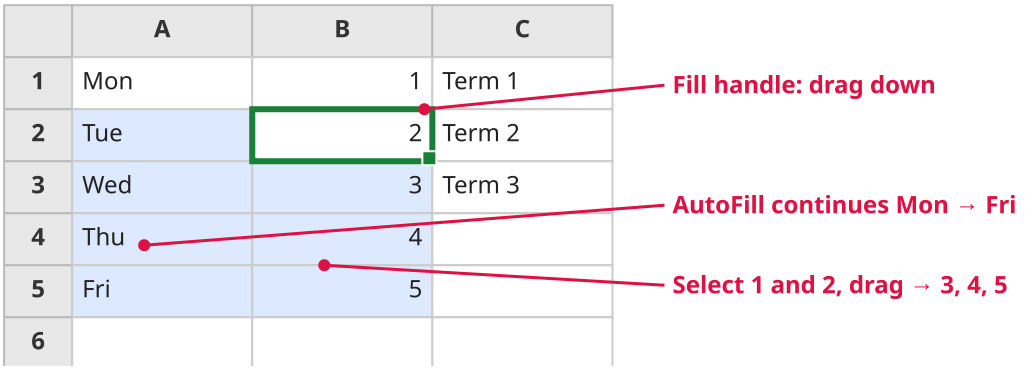
Example: in the mark sheet, typing **=B2+C2** in F2 shows **137** (72 + 65). If you type **B2+C2** without =, the cell just shows the text 'B2+C2'.

> 💡 Phone numbers like 0771234567 lose the first 0 if entered as numbers. Type them as text: start with an apostrophe ' or format the cells as Text first.

4. Editing data

- **Overwrite:** select the cell and type – the old content is replaced.
- **F2** (or double-click) edits inside the cell; **Esc** cancels; **Enter** confirms.
- Click in the **formula bar** to edit a long formula.
- **Delete** clears the content; Ctrl+Z undoes a mistake.

5. Fill handle and AutoFill



Drag the fill handle (small square at the bottom-right of the selection) to copy or continue a series.

- Mon → Tue, Wed, Thu, Fri; Jan → Feb, Mar ...; Term 1 → Term 2, Term 3.
- Select **1** and **2**, then drag → 3, 4, 5 (step 1). Select **5** and **10** → 15, 20 (step 5).
- Dragging a **formula** copies it and changes the cell addresses (see 7.6).
- Google Sheets may offer **Smart Fill / autocomplete** suggestions – accept only if correct.

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Key Words

Column – Vertical line of cells named by a letter.	**Row** – Horizontal line of cells named by a number.
Cell – Box where a column and a row meet.	**Cell address** – Column letter + row number, e.g. C4.
Range – Block of cells written first:last, e.g. A1:C5.	**Label** – Text entry such as a heading or name.
Value – A number that can be used in calculations.	**Formula** – A calculation that starts with =.
F2 – Key to edit the active cell.	**Ctrl+Home** – Shortcut that jumps to cell A1.
Fill handle – Small square at the corner of a selection used to drag-copy.	**AutoFill** – Continues a series such as Mon, Tue… or 1, 2, 3.

Sample Q&A

1. What is a cell address?

> **Answer:** The column letter followed by the row number, e.g. D7.

2. How many cells are in the range B2:D5?

> **Answer:** 3 columns × 4 rows = 12.

3. Which key goes straight to A1?

> **Answer:** Ctrl+Home.

4. How does a spreadsheet know that an entry is a formula?

> **Answer:** It starts with the = sign.

5. Give two ways to edit a cell without retyping all of it.

> **Answer:** Press F2 (or double-click) or edit in the formula bar.

6. What does AutoFill do with ‘Jan’?

> **Answer:** Continues the months: Feb, Mar, Apr…

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MCQ

1. The cell in column D, row 8 is…

A. R8D
B. D8
C. 8D
D. D:8

2. How many cells are in A1:C5?

A. 53
B. 10
C. 8
D. 15

3. How many cells are in B2:D5?

A. 12
B. 15
C. 9
D. 7

4. Which shows a range correctly?

A. A1/C5
B. A1:C5
C. A1-C5
D. A1;C5

5. Ctrl+Home moves to…

A. A1
B. The next sheet
C. The last row
D. The formula bar

6. Pressing Tab after typing moves…

A. One cell down
B. To the next sheet
C. One cell right
D. To A1

7. To jump to cell K250 quickly, type it in the…

A. Name Box
B. Status bar
C. Title bar
D. Sheet tab

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8. Which entry is a formula?

A. 137
B. B2+C2
C. Total
D. =B2+C2

9. By default, numbers in a cell are aligned…

A. Left
B. Right
C. Justified
D. Centre

10. If F2 contains =B2+C2 with B2=72 and C2=65, F2 shows…

A. 137
B. 7
C. 7265
D. =B2+C2

11. The key to edit the active cell is…

A. F12
B. F7
C. F2
D. F4

12. Dragging the fill handle from ‘Mon’ down 4 cells gives…

A. Jan, Feb, Mar, Apr
B. 1, 2, 3, 4
C. Tue, Wed, Thu, Fri
D. Mon, Mon, Mon, Mon

13. Select 5 and 10 and drag the fill handle. The next two are…

A. 50, 500
B. 15, 20
C. 11, 12
D. 10, 10

14. The column after Z is…

A. ZA
B. A2
C. Z1
D. AA

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15. Esc while editing a cell…

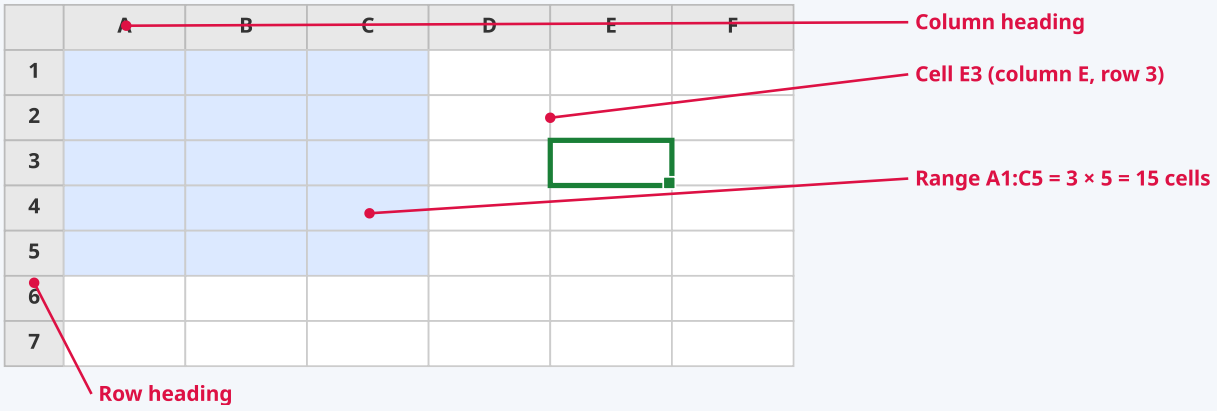
A. Saves the file
B. Moves to A1
C. Cancels the change
D. Deletes the row

Structured Questions

1. (i) What is a cell address? Give an example. (2 marks)
(ii) How many cells are in the range C3:F7? (2 marks) *(4 marks)*

> (i) Column letter + row number, e.g. C4. (ii) 4 columns (C–F) × 5 rows (3–7) = 20.

2. Shade the range A1:C5 on a grid and mark cell E3. *(3 marks)*

> See diagram: A1 to C5 shaded (15 cells), E3 boxed.
>
> 
>
>
> Model answer.

3. Classify as label, number or formula: (a) Total (b) 4500 (c) =SUM(B2:B6) (d) 2026 (e) Colombo. *(5 marks)*

> (a) label (b) number (c) formula (d) number (e) label.

4. Write the key or method to: (i) go to A1 (ii) move right (iii) edit a cell (iv) go to Z100. *(4 marks)*

> (i) Ctrl+Home (ii) Tab or → (iii) F2 (iv) type Z100 in the Name Box / Ctrl+G.

5. Explain how to enter the numbers 1 to 30 in A1:A30 quickly. *(2 marks)*

> Type 1 in A1 and 2 in A2, select both and drag the fill handle down to A30 (AutoFill).

Summary

- Columns = letters, rows = numbers, cell = where they meet.

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- Cell address: column then row, e.g. E3.
- Range first:last, e.g. A1:C5; cells = columns × rows.
- Move with arrows, Tab, Enter, Ctrl+Home, Ctrl+arrow, Name Box/Go To.
- Labels are text; numbers are values; formulae start with =.
- Edit with F2, double-click or the formula bar; Esc cancels.
- Fill handle copies; AutoFill continues series.
- Type phone numbers as text to keep the leading 0.

MCQ answer key – 7.2

1. **B** – Letter then number.
2. **D** – 3 × 5 = 15.
3. **A** – 3 × 4 = 12.
4. **B** – Colon.
5. **A** – Home = A1.
6. **C** – Tab = right.
7. **A** – Or Go To (Ctrl+G/F5).
8. **D** – Starts with =.
9. **B** – Numbers right, text left.
10. **A** – 72+65.
11. **C** – F2 = edit.
12. **C** – AutoFill series.
13. **B** – Step 5.
14. **D** – AA, AB …
15. **C** – Esc = cancel.

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7.3 Spreadsheet Formulas: Operators and Simple Calculations

A **formula** tells the spreadsheet to calculate. Every formula starts with **=**. It can use **values** (=5+3) or, better, **cell addresses** (=B2*C2) so that the answer updates when the data changes. In this note you will use the five arithmetic **operators + − * / ^** and learn the **order of operations (precedence)**: brackets first, then powers, then multiply and divide, then add and subtract.

1. The arithmetic operators

Operator	Meaning	Formula	Result
+	Add	=15+7	22
− (minus key -)	Subtract	=15-7	8
*	Multiply	=15*7	105
/	Divide	=15/6	2.5
^	Power (exponent)	=2^5	32

💡 Use the asterisk * (not ×) and the slash / (not ÷). Typing 15×7 or 15x7 gives an error or text.

2. Calculations using cell addresses

Let **A1 = 20, B1 = 4, C1 = 3**. Then =A1+B1 → **24**, =A1-B1 → **16**, =A1*B1 → **80**, =A1/B1 → **5**, =B1^C1 → **64**. If B1 changes to 5, =A1*B1 becomes **100** automatically.

Item (A)	Qty (B)	Price Rs. (C)	D: =B*C
Exercise book	5	120	=B2*C2 → 600
Pen	4	45	=B3*C3 → 180
Ruler	2	80	=B4*C4 → 160
Glue	1	150	=B5*C5 → 150

Bill total: **=D2+D3+D4+D5** = Rs. **1090**. Area of a square of side 12 m: **=12^2** = **144** m^2.

3. Order of operations (precedence)

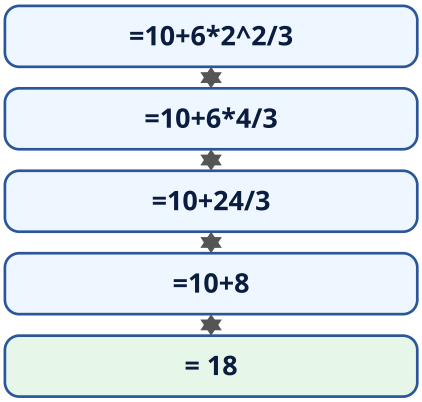
1. Brackets ( )
Worked out first.

2. Power ^
Next.

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3. * and /
Left to right.

4. + and −
Left to right, last.



Start

1. Power ^ first: 2^2 = 4

2. * and / left to right: 6*4 = 24

then 24/3 = 8

3. + last: 10+8 = 18

Order (BODMAS)

1. ( ) Brackets
2. ^ Power
3. * / left→right
4. + − left→right

Worked example: =10+6*2^2/3 = 18.

Formula	Working	Result
=2+3*4	3*4 = 12 first, then 2+12	14
=(2+3)*4	Brackets: 5, then 5*4	20
=20-8/4	8/4 = 2, then 20-2	18
=(20-8)/4	12/4	3
=3*2^3	2^3 = 8 first, then 3*8	24
=(3*2)^2	6^2	36
=12/4*3	Left to right: 3*3	9
=(72+65+58)/3	Average of three marks	65

💡 Common mistake: **=B2+C2+D2/3** divides only D2 by 3. For an average write **=(B2+C2+D2)/3**. With Nimal's marks: wrong = 156.33, right = 65.

4. Error values (2026 focus)

Error	Cause	Fix
#DIV/0!	Dividing by zero or an empty cell, e.g. =A1/0	Check the divisor
#VALUE!	Text used in maths, e.g. =A1+D1 where D1 = 'ten'	Type a number
#NAME?	Misspelt function name, e.g. =SUMM(A1:B1)	Correct the spelling
####	Column too narrow for the number or date	Widen the column (double-click its border)

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Key Words

Formula – A calculation starting with =.	**Operator** – Symbol for a calculation: + − * / ^.
Addition (+) – Adds values: =4+5.	**Subtraction (−)** – Subtracts: =9-4.
Multiplication (*) – Multiplies with the asterisk: =6*7.	**Division (/)** – Divides with a slash: =20/4.
Exponent (^) – Raises to a power: =2^3 = 8.	**Precedence** – Order in which operators are worked out.
BODMAS – Brackets, Orders (powers), Division/Multiplication, Addition/Subtraction.	**Cell reference** – Using a cell address in a formula, e.g. =B2*C2.
#DIV/0! – Error when dividing by zero or an empty cell.	**#VALUE!** – Error when text is used in a calculation.

Sample Q&A

1. Why should formulas use cell addresses instead of values?

> **Answer:** The result updates automatically when the data in the cells changes.

2. What is the result of =2+3*4?

> **Answer:** 14 (multiply first).

3. What is the result of =(2+3)*4?

> **Answer:** 20 (brackets first).

4. Write a formula to find the average of B2, C2 and D2.

> **Answer:** =(B2+C2+D2)/3

5. What does #DIV/0! mean?

> **Answer:** The formula divides by zero or by an empty cell.

6. Which operator means power?

> **Answer:** ^ (caret), e.g. =3^2 = 9.

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MCQ

1. Every formula must begin with...

A. =
B. $
C. #
D. +

2. The multiplication operator is...

A. x
B. ^
C. *
D. ×

3. The result of =2+3*4 is...

A. 14
B. 24
C. 20
D. 9

4. The result of =(2+3)*4 is...

A. 24
B. 20
C. 9
D. 14

5. The result of =2^4 is...

A. 8
B. 6
C. 16
D. 24

6. The result of =20-8/4 is...

A. 3
B. 12
C. 16
D. 18

7. The result of =3*2^3 is...

A. 216
B. 12
C. 24
D. 18

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8. The result of =12/4*3 is...

A. 36
B. 4
C. 1
D. 9

9. A1 = 20 and B1 = 4. =A1/B1 gives...

A. 24
B. 5
C. 16
D. 80

10. B1 = 4 and C1 = 3. =B1^C1 gives...

A. 64
B. 12
C. 81
D. 7

11. Which formula correctly averages B2, C2 and D2?

A. =B2+C2+(D2/3)
B. =(B2+C2+D2)/3
C. =(B2+C2)+D2/3
D. =B2+C2+D2/3

12. Qty 5 in B2 and price Rs. 120 in C2. =B2*C2 shows...

A. 5120
B. 125
C. 600
D. 24

13. Which operator is worked out first?

A. ^
B. −
C. +
D. *

14. =A1/B1 where B1 is empty shows...

A. 20
B. ####
C. #VALUE!
D. #DIV/0!

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15. A column too narrow for a number shows…

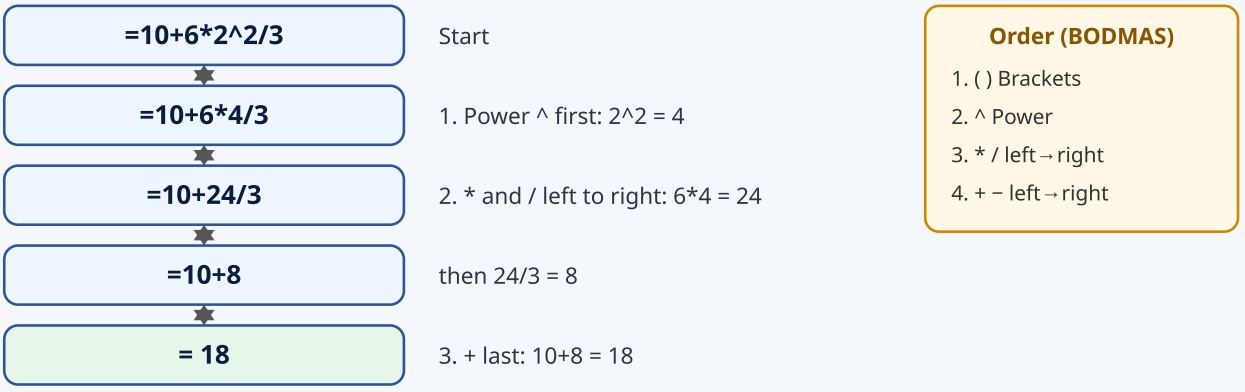
A. #DIV/0!
B. ####
C. #NAME?
D. #VALUE!

Structured Questions

1. Write the results: (a) =15+7 (b) =15-7 (c) =15*7 (d) =15/6 (e) =2^5 *(5 marks)*

> (a) 22 (b) 8 (c) 105 (d) 2.5 (e) 32

2. Work out =10+6*2^2/3 step by step. *(4 marks)*

> 2^2 = 4; 6*4 = 24; 24/3 = 8; 10+8 = 18.
>
> 
>
>
> Model working.

3. A shop bill has Qty in B2:B5 and Price in C2:C5. (i) Write the formula for D2. (ii) Write a formula for the total in D6 using +. (iii) Give the total for the data 5×120, 4×45, 2×80, 1×150. *(4 marks)*

> (i) =B2*C2 (ii) =D2+D3+D4+D5 (iii) 600 + 180 + 160 + 150 = Rs. 1090.

4. Nimal's marks are 72, 65 and 58 in B2, C2, D2. A student typed =B2+C2+D2/3. (i) What result is shown? (ii) Correct the formula and give the right answer. *(4 marks)*

> (i) 156.33 (only D2 divided). (ii) =(B2+C2+D2)/3 = 65.

5. State the cause of each error: #DIV/0!, #VALUE!, #NAME?, ####. *(4 marks)*

> #DIV/0! divide by zero/empty; #VALUE! text in a calculation; #NAME? wrong function name; #### column too narrow.

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Summary

- Formulas start with =.
- Operators: + add, − subtract, * multiply, / divide, ^ power.
- Use cell addresses so results update automatically.
- Order: brackets, ^, * and /, + and − (left to right).
- =2+3*4 = 14 but =(2+3)*4 = 20.
- Average of three: =(B2+C2+D2)/3.
- #DIV/0! divide by zero; #VALUE! text in maths.
- #NAME? wrong name; #### column too narrow.

MCQ answer key – 7.3

1. **A** – Equals sign.
2. **C** – Asterisk.
3. **A** – 3*4 first.
4. **B** – Brackets first.
5. **C** – 2×2×2×2.
6. **D** – 8/4 first.
7. **C** – Power before multiply.
8. **D** – Left to right.
9. **B** – 20/4.
10. **A** – 4×4×4.
11. **B** – Brackets around the sum.
12. **C** – 5 × 120.
13. **A** – Power is highest (after brackets).
14. **D** – Empty = 0.
15. **B** – Widen the column.

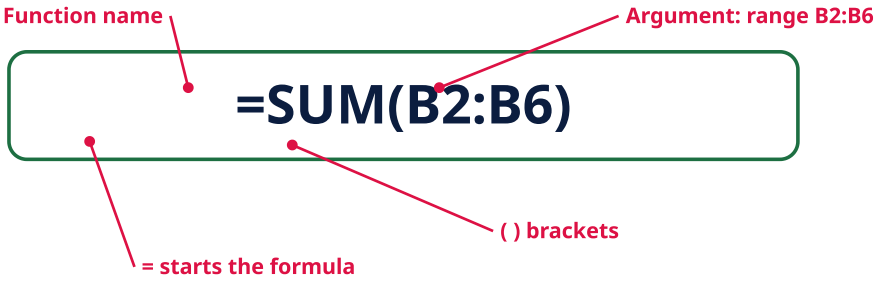
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G.C.E. O/L Grade 10 ICT · Lesson 7

7.4 Spreadsheet Functions: SUM, AVERAGE, MAX, MIN and COUNT

A **function** is a ready-made formula with a name. You give it **arguments (parameters)** inside brackets and it returns an answer. In this note you will use the five basic statistical functions **SUM, AVERAGE, MAX, MIN and COUNT** on a mark sheet and on Colombo rainfall data, learn the difference between a **range** (B2:B6) and a **list** (B2,B4,B6), and see why **COUNT counts numbers only**.

1. Syntax of a function



Lists: =SUM(B2,B4,B6) · range + list: =SUM(B2:B6,10)

=FUNCTION(arguments): equals sign, name, brackets, and one or more arguments separated by commas.

- **Range** argument: B2:B6 = all cells from B2 to B6.
- **List** argument: B2,B4,B6 = only those cells (commas).
- Mixed: =SUM(B2:B6,10) adds the range and the number 10.
- Function names are not case-sensitive (=sum(b2:b6) works) but must be spelt correctly, otherwise **#NAME?**.

2. The data: Grade 10 mark sheet

A: Name	B: Sinhala	C: Maths	D: Science	E: ICT
2 Nimal	72	65	58	80
3 Sara	88	91	79	95
4 Kasun	54	47	62	70
5 Dilini	67	ab (absent)	71	85
6 Ishan	81	76	(empty)	64

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3. The five functions

Function	Does	Example	Result
SUM	Adds numbers	=SUM(B2:B6)	362
AVERAGE	Sum ÷ how many numbers	=AVERAGE(B2:B6)	72.4
MAX	Largest number	=MAX(E2:E6)	95
MIN	Smallest number	=MIN(E2:E6)	64
COUNT	How many cells hold numbers	=COUNT(C2:C6)	4

Nimal's total: **=SUM(B2:E2)** = **275**; his average **=AVERAGE(B2:E2)** = **68.75**. Sara's highest mark **=MAX(B3:E3)** = **95**; Kasun's lowest **=MIN(B4:E4)** = **47**.

4. COUNT counts numbers only

Column C (Maths) holds C2:C6 = 65, 91, 47, ab, 76. **=COUNT(C2:C6)** = **4** because 'ab' is text. SUM and AVERAGE also ignore text, so **=AVERAGE(C2:C6)** = 279 ÷ 4 = **69.75**. In column D the empty cell is ignored: **=COUNT(D2:D6)** = **4**, **=AVERAGE(D2:D6)** = **67.5**.

> **NEW 2026** Extra: **COUNTA** counts every non-empty cell, text too. =COUNTA(C2:C6) = **5** (includes 'ab'); =COUNTA(A2:A6) = **5** students.

5. Rainfall example and range vs list

Month (A)	Jan	Feb	Mar	Apr	May	Jun
Rain mm (B2:B7)	58	73	128	245	392	184

- Total: =SUM(B2:B7) = **1080** mm
- Average: =AVERAGE(B2:B7) = **180** mm
- Wettest: =MAX(B2:B7) = **392** (May); driest: =MIN(B2:B7) = **58** (Jan)
- List: =SUM(B2,B4,B6) = 58+128+392 = **578** (Jan, Mar, May only)
- Range of values (spread): =MAX(B2:B7)-MIN(B2:B7) = **334** mm

> 💡 **AutoSum (Σ)** on the Home tab inserts =SUM( ) for you; its arrow gives Average, Count Numbers, Max and Min. In Google Sheets use the **Σ Functions** button.

Key Words

Function – A named, ready-made formula such as SUM.

Argument – Value or range given to a function inside brackets.

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Syntax – The correct way to write a function: =NAME(arguments).	**SUM** – Adds all the numbers in its arguments.
AVERAGE – Total of the numbers divided by how many numbers.	**MAX** – Returns the largest number.
MIN – Returns the smallest number.	**COUNT** – Counts the cells that contain numbers.
COUNTA – Counts all non-empty cells (text too).	**Range argument** – A block such as B2:B6.
List argument – Separate cells with commas such as B2,B4,B6.	**AutoSum** – Σ button that inserts SUM quickly.

Sample Q&A

1. Write the syntax of the SUM function.

> **Answer:** =SUM(number1, number2, ...) or =SUM(range), e.g. =SUM(B2:B6).

2. What is an argument?

> **Answer:** The data (values, cells or ranges) given to a function inside its brackets.

3. Why does =COUNT(C2:C6) give 4 and not 5?

> **Answer:** C5 contains the text ‘ab’; COUNT counts numbers only.

4. Find the average rainfall Jan–Jun.

> **Answer:** =AVERAGE(B2:B7) = 180 mm.

5. Difference between B2:B6 and B2,B6?

> **Answer:** B2:B6 is a range of 5 cells; B2,B6 is a list of only 2 cells.

6. Difference between COUNT and COUNTA?

> **Answer:** COUNT counts numbers only; COUNTA counts all non-empty cells.

MCQ

1. =SUM(B2:B6) for Sinhala marks 72, 88, 54, 67, 81 gives...

A. 362
B. 88
C. 352
D. 5

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2. =AVERAGE(B2:B6) for the same marks gives…

A. 90.5
B. 72.4
C. 72
D. 67

3. =MAX(E2:E6) for ICT marks 80, 95, 70, 85, 64 is…

A. 80
B. 394
C. 95
D. 64

4. =MIN(E2:E6) for the same marks is…

A. 95
B. 70
C. 64
D. 5

5. C2:C6 = 65, 91, 47, ab, 76. =COUNT(C2:C6) is…

A. 5
B. 279
C. 3
D. 4

6. For the same cells =COUNTA(C2:C6) is…

A. 1
B. 4
C. 5
D. 0

7. For the same cells =AVERAGE(C2:C6) is…

A. 55.8
B. #VALUE!
C. 70
D. 69.75

8. Rainfall 58, 73, 128, 245, 392, 184. =SUM(B2:B7) is…

A. 1080
B. 1000
C. 392
D. 6

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9. For the same rainfall =AVERAGE(B2:B7) is…

A. 128
B. 180
C. 216
D. 186.5

10. =SUM(B2,B4,B6) with the rainfall data gives…

A. 578
B. 3
C. 502
D. 1080

11. In =SUM(B2:B6), B2:B6 is the…

A. Operator
B. Function name
C. Result
D. Argument

12. =SUMM(B2:B6) shows…

A. ####
B. #DIV/0!
C. #NAME?
D. 362

13. Which counts how many students have a Maths mark?

A. COUNT
B. SUM
C. AVERAGE
D. MAX

14. =SUM(B2:B6,10) with Sinhala marks gives…

A. 10
B. 372
C. 3620
D. 362

15. The Σ button on the Home tab is…

A. Sort
B. AutoSum
C. Merge & Centre
D. AutoFill

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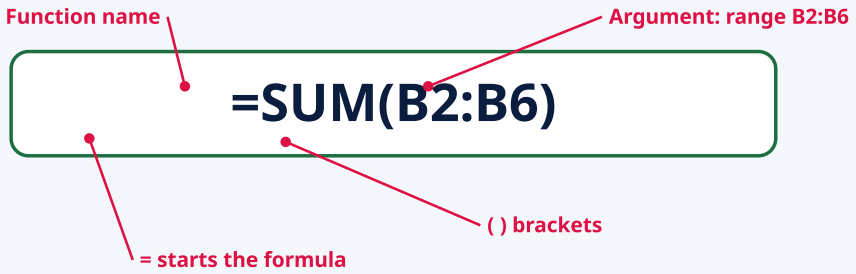
Structured Questions

1. Using the mark sheet, write a formula and give the result for: (i) total of Sara (B3:E3) (ii) average Sinhala mark (iii) highest ICT mark (iv) lowest Science mark. *(8 marks)*

> (i) =SUM(B3:E3) = 353 (ii) =AVERAGE(B2:B6) = 72.4 (iii) =MAX(E2:E6) = 95 (iv) =MIN(D2:D6) = 58.

2. Label the parts of =SUM(B2:B6). *(3 marks)*

> = sign, function name SUM, brackets with the argument (range) B2:B6.



Lists: =SUM(B2,B4,B6) · range + list: =SUM(B2:B6,10)

Model answer.

3. C2:C6 holds 65, 91, 47, ab, 76. Give the results of COUNT, COUNTA, SUM and AVERAGE for this range and explain the difference between COUNT and COUNTA. *(5 marks)*

> COUNT 4, COUNTA 5, SUM 279, AVERAGE 69.75. COUNT counts numbers only; COUNTA counts all non-empty cells.

4. Rainfall Jan–Jun is in B2:B7 (58, 73, 128, 245, 392, 184). Write formulas for the total, average, wettest and driest months and give the answers. *(4 marks)*

> =SUM(B2:B7) = 1080; =AVERAGE(B2:B7) = 180; =MAX(B2:B7) = 392; =MIN(B2:B7) = 58.

5. Explain the difference between a range and a list argument with examples. *(2 marks)*

> Range uses a colon for a block: =SUM(B2:B7); list uses commas for separate cells: =SUM(B2,B4,B6).

Summary

- Function = named ready-made formula: =NAME(arguments).
- Arguments go in brackets; range uses :, list uses commas.
- SUM adds; AVERAGE = sum ÷ count of numbers.
- MAX largest; MIN smallest.
- COUNT counts numbers only; COUNTA counts all non-empty cells.
- Text and empty cells are ignored by SUM, AVERAGE, MAX, MIN.

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- Misspelt function → #NAME?.
- AutoSum Σ inserts SUM, AVERAGE, COUNT, MAX, MIN quickly.

MCQ answer key – 7.4

1. **A** – Add all five.
2. **B** – 362/5.
3. **C** – Largest.
4. **C** – Smallest.
5. **D** – Text not counted.
6. **C** – Text counted too.
7. **D** – 279/4; text ignored.
8. **A** – Total.
9. **B** – 1080/6.
10. **A** – Only B2, B4, B6.
11. **D** – Inside the brackets.
12. **C** – Misspelt name.
13. **A** – Numbers only.
14. **B** – Range + 10.
15. **B** – Inserts SUM.

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G.C.E. O/L Grade 10 ICT · Lesson 7

7.5 Formatting a Worksheet: Fonts, Alignment and Number Formats

Formatting changes how data **looks**, not the value stored in the cell. A well-formatted sheet is easier to read: bold headings, aligned columns, correct **decimal places**, **currency (Rs.)** and **percentage** formats, **borders** and **fill colour**. In this note you will format a mark sheet and a shop bill in Excel, Calc and Google Sheets.

1. Font formatting

- **Font** (typeface) and **font size**, e.g. Calibri 11 → Arial 14 for the title.
- **Bold (Ctrl+B)**, *Italic* **(Ctrl+I)**, Underline (Ctrl+U), font colour.
- Excel/Calc: Home → Font group (Calc: Formatting toolbar or Format → Cells → Font). Sheets: toolbar B, I, font list.

2. Alignment

Alignment	Use
Left	Default for text (labels)
Centre	Headings and short codes
Right	Default for numbers; keeps decimal points in line
Justify	Long text wrapped in a cell, both edges straight
Merge & Centre	Joins A1:E1 into one cell and centres the title
Wrap Text	Shows long text on several lines in one cell

3. Decimal places

Increase Decimal (.00→.000) and **Decrease Decimal** buttons change how many decimals are **shown**. The stored value does not change. Average Sinhala mark = 72.4:

Decimal places	0	1	2	3
Shown as	72	72.4	72.40	72.400
Maths average 69.75	70	69.8	69.75	69.750

💡 Rounding: 5 or more rounds up. 69.75 with 1 decimal → 69.8; with 0 decimals → 70. Calculations still use the full value 69.75.

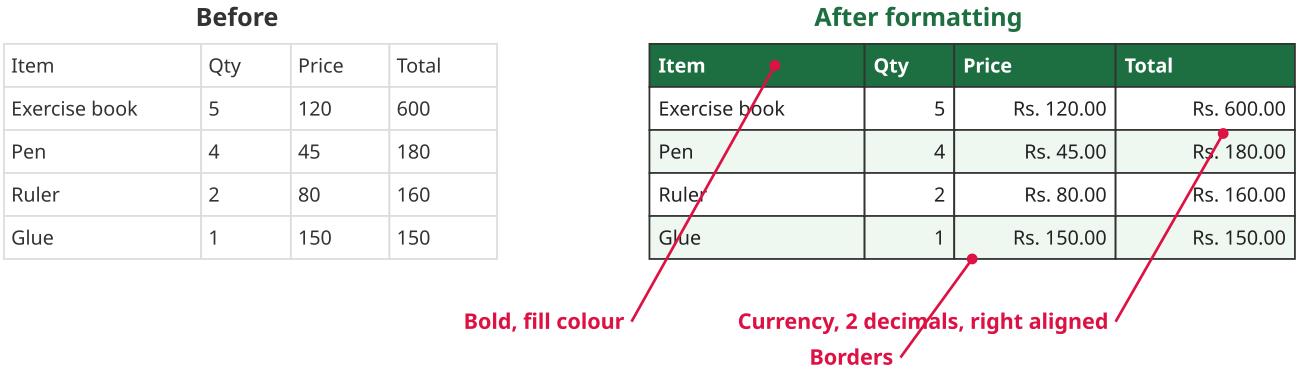
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4. Number, currency and percentage formats

Format	Stored value	Shown as
General	1090	1090
Number (2 dp)	1090	1090.00
Currency Rs. (LKR)	1090	Rs. 1,090.00
Percentage	0.05	5%
Percentage (1 dp)	0.125	12.5%

Excel: Home → Number group → Currency/Percentage (choose **Rs. Sinhala (Sri Lanka)** under More Number Formats). Calc: Format → Cells → Numbers → Currency **LKR**. Sheets: Format → Number → Custom currency → **Rs.**

5. Borders and fill colour



The shop bill before and after formatting: bold white heading on green fill, borders, currency with 2 decimals, numbers right-aligned.

- **Borders**: Home → Borders (All Borders, Thick Outside Border). Calc: Borders button. Sheets: Borders icon.
- **Fill colour** (paint bucket) shades the cell background.
- Change **column width** by dragging or double-clicking the heading border to fix ####.
- **Format Painter** copies formatting from one cell to others.

Key Words

Formatting – Changing how data looks without changing the value.

Font size – Size of the characters in points.

Bold – Thick characters (Ctrl+B).

Italic – Slanted characters (Ctrl+I).

Alignment – Position of data in a cell: left, centre, right, justify.

Merge & Centre – Joins cells into one and centres the content.

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Increase Decimal – Shows one more decimal place.	**Decrease Decimal** – Shows one fewer decimal place (rounds).
Currency format – Shows a currency symbol such as Rs. and 2 decimals.	**Percentage format** – Multiplies by 100 and shows %, e.g. 0.05 → 5%.
Borders – Lines drawn around cells.	**Fill colour** – Background colour of a cell.

Sample Q&A

1. Does formatting change the value in a cell?

> **Answer:** No. It changes only how the value is displayed.

2. Name the four basic alignments.

> **Answer:** Left, centre, right and justify.

3. How is 72.4 shown with 0 and 2 decimal places?

> **Answer:** 72 and 72.40.

4. How is 0.05 shown in percentage format?

> **Answer:** 5%.

5. What does Merge & Centre do?

> **Answer:** Joins selected cells into one and centres the text, e.g. a title across A1:E1.

6. How do you show 1090 as Rs. currency?

> **Answer:** Select it → Currency format with Rs./LKR → Rs. 1,090.00.

MCQ

1. Which shortcut makes text bold?

A. Ctrl+I
B. Ctrl+U
C. Ctrl+D
D. Ctrl+B

2. By default numbers are aligned to the...

A. Left
B. Centre
C. Right
D. Top only

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3. Joining A1:E1 and centring a title uses…

A. Merge & Centre
B. AutoSum
C. Freeze Panes
D. Wrap Text

4. 72.4 shown with 0 decimal places is…

A. 72.4
B. 72
C. 72.40
D. 73

5. 69.75 shown with 1 decimal place is…

A. 69.8
B. 70
C. 69.75
D. 69.7

6. 72.4 shown with 2 decimal places is…

A. 72.4
B. 72
C. 72.40
D. 72.04

7. 0.05 in percentage format shows…

A. 50%
B. 0.05%
C. 5%
D. 0.5%

8. 0.125 in percentage format with 1 decimal shows…

A. 12.5
B. 1.3%
C. 125%
D. 12.5%

9. 1090 in Rs. currency format with 2 decimals shows…

A. Rs. 109,000
B. Rs. 10.90
C. Rs. 1,090.00
D. 1090%

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10. Decrease Decimal changes…

A. Only how the number is shown
B. The formula
C. The column letter
D. The stored value

11. Long text on several lines in one cell needs…

A. Bold
B. Wrap Text
C. Merge & Centre
D. Borders

12. Which alignment makes both edges of wrapped text straight?

A. Right
B. Justify
C. Left
D. Centre

13. The paint bucket button applies…

A. Fill colour
B. Borders
C. Font colour
D. Italic

14. To copy formatting from one cell to others use…

A. AutoFill
B. Paste Values
C. Sort
D. Format Painter

15. In LibreOffice Calc the Sri Lankan currency code is…

A. SLR
B. LKR
C. INR
D. USD

Structured Questions

1. List four font formats and four alignments. *(4 marks)*

> Fonts: font type, size, bold, italic, underline, colour. Alignments: left, centre, right, justify.

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2. A cell holds 69.75. Write what is shown with 0, 1, 2 and 3 decimal places. *(4 marks)*

> 70; 69.8; 69.75; 69.750.

3. Describe the formatting applied to the shop bill shown. *(4 marks)*

> Bold heading with fill colour; borders around all cells; prices in currency Rs. with 2 decimals; numbers right-aligned.

Before

Item	Qty	Price	Total
Exercise book	5	120	600
Pen	4	45	180
Ruler	2	80	160
Glue	1	150	150

After formatting

Item	Qty	Price	Total
Exercise book	5	Rs. 120.00	Rs. 600.00
Pen	4	Rs. 45.00	Rs. 180.00
Ruler	2	Rs. 80.00	Rs. 160.00
Glue	1	Rs. 150.00	Rs. 150.00



> Model answer.

4. Explain why a cell shows #### and how to fix it. *(2 marks)*

> The column is too narrow for the number/date; widen the column (drag or double-click the column border).

5. Give the display of 0.05 in percentage format and 1090 in Rs. currency format. Does formatting change the value used in =1090*0.05? *(3 marks)*

> 5%; Rs. 1,090.00. No – the result is still 54.5.

Summary

- Formatting changes appearance, not the stored value.
- Font, size, bold (Ctrl+B), italic (Ctrl+I), underline, colour.
- Alignment: left, centre, right, justify; Merge & Centre; Wrap Text.
- Text left and numbers right by default.
- Increase/Decrease Decimal changes decimals shown; 5 or more rounds up.
- Currency Rs./LKR and percentage (× 100, %).
- Borders and fill colour make tables clear.
- Widen a column to fix ####; Format Painter copies formats.

MCQ answer key – 7.5

1. **D** – B = bold.
2. **C** – Numbers right.
3. **A** – Merge & Centre.

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4. **B** – Rounds down (.4).
5. **A** – .75 → .8.
6. **C** – Adds a 0.
7. **C** – × 100.
8. **D** – × 100.
9. **C** – Rs. and 2 decimals.
10. **A** – Display only.
11. **B** – Wrap Text.
12. **B** – Justify.
13. **A** – Background colour.
14. **D** – Brush icon.
15. **B** – Sri Lankan rupee.

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G.C.E. O/L Grade 10 ICT · Lesson 7

7.6 Relative and Absolute Cell References (A1)

When you copy a formula with the **fill handle**, the spreadsheet changes the cell references. A **relative reference** (B2) moves with the formula. An **absolute reference** (F1) stays fixed. Choosing the right one lets you write a formula once and copy it down a whole column.

1. Relative references

In the shop bill, D2 contains **=B2*C2** (Qty × Price). Dragging the fill handle from D2 to D5 changes the row number in each copy:

Cell	Formula	Result (Rs.)
D2	=B2*C2	600
D3	=B3*C3	180
D4	=B4*C4	160
D5	=B5*C5	150
D6	=SUM(D2:D5)	1090

> 💡 Rule: copying **down** changes the **row number**; copying **across** changes the **column letter**. Copying =SUM(B2:E2) from F2 to F6 gives =SUM(B6:E6).

2. Absolute references

The discount rate 5% is stored once in **F1** (0.05). E2 needs D2 × F1. If you copy **=D2*F1** down, F1 also moves (F2, F3…) and those cells are empty:

Cell	Wrong (relative)	Result	Correct (absolute)	Result
E2	=D2*F1	30	=D2*F1	30
E3	=D3*F2	0	=D3*F1	9
E4	=D4*F3	0	=D4*F1	8
E5	=D5*F4	0	=D5*F1	7.5

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Copying down: the relative formula =B2*C2 changes row by row, while F1 in =D2*F1 stays fixed.

Total discount =SUM(E2:E5) = Rs. 54.5. The **$** sign locks the column ($F) and the row ($1).

3. The F4 key

While editing a reference, press **F4** in Excel and Google Sheets (**Shift+F4** in LibreOffice Calc; Cmd+T in Excel for Mac). In Excel each press cycles:

Press	Reference	Type
0	F1	Relative
1	F1	Absolute
2	F$1	Mixed – row fixed
3	$F1	Mixed – column fixed
4	F1	Back to relative

NEW 2026 Extra (beyond the syllabus): **mixed references**. In A$1 only the row is fixed; in $A2 only the column is fixed. Copying =A$1*$A2 from B2 to C3 gives =B$1*$A3, and to D4 gives =C$1*$A4 – used for multiplication tables.

4. Worked example: mark totals

F2: =SUM(B2:E2) → Nimal 275. Copy to F3 → =SUM(B3:E3) → Sara 353. Copy to F4 → Kasun 233.

Key Words

Cell reference – The address of a cell used in a formula, e.g. B2.

Relative reference – A reference that changes when the formula is copied, e.g. B2.

Absolute reference – A reference that stays fixed when copied, e.g. F1.

Mixed reference – Only the row or only the column is fixed, e.g. F$1 or $F1.

Dollar sign ($) – Locks the column letter or row number that follows it.

F4 key – Cycles a reference through relative, absolute and mixed (Shift+F4 in Calc).

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Fill handle – Small square at the bottom-right of the active cell used to copy.

Copy down – Copying to rows below; relative row numbers increase.

Copy across – Copying to columns on the right; relative column letters change.

Constant cell – A cell holding a fixed value such as a rate, used by many formulas.

Discount rate – A percentage taken off a price, e.g. 0.05 = 5%.

Ctrl+D – Fills the formula from the cell above into the selected cells.

Sample Q&A

1. What is a relative reference?

> **Answer:** A reference such as B2 that adjusts when the formula is copied.

2. What does F1 mean?

> **Answer:** An absolute reference: column F and row 1 are both locked.

3. =B2*C2 in D2 is copied to D4. What is the formula?

> **Answer:** =B4*C4.

4. =D2*F1 in E2 is copied to E5. What is the formula?

> **Answer:** =D5*F1.

5. Why did =D2*F1 copied down give 0?

> **Answer:** F1 became F2, F3… which are empty (treated as 0). Use F1.

6. What does the F4 key do?

> **Answer:** Cycles the reference: F1 → F1 → F$1 → $F1 → F1.

MCQ

1. Which is an absolute reference?

A. C$4
B. $C4
C. C4
D. C4

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2. =B2*C2 in D2 copied to D3 becomes…

A. =B2*C2
B. =B3*C3
C. =C2*D2
D. =B3*C2

3. =B2*C2 copied to D5 gives Rs. …

A. 1090
B. 600
C. 150
D. 0

4. =D2*F1 in E2 copied to E4 becomes…

A. =D4*F1
B. =D4*F3
C. =D2*F1
D. =D4*F3

5. With D2 = 600 and F1 = 0.05, E2 =D2*F1 gives…

A. 3000
B. 30
C. 600
D. 0.05

6. The relative formula =D2*F1 copied to E3 gives…

A. 9
B. 180
C. 0
D. #VALUE!

7. Total of D2:D5 in the bill is Rs. …

A. 1090
B. 395
C. 1000
D. 1180

8. Total discount =SUM(E2:E5) is Rs. …

A. 109
B. 54.5
C. 545
D. 5.45

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9. In Excel, pressing F4 once on F1 gives...

A. F1
B. $F1
C. F$1
D. F1

10. In F$1 which part is fixed?

A. Neither
B. Both
C. Row 1 only
D. Column F only

11. =SUM(B2:E2) in F2 copied to F6 becomes...

A. =SUM(F2:I2)
B. =SUM(B2:E2)
C. =SUM(B6:E2)
D. =SUM(B6:E6)

12. =B2 in C5 copied to D7 becomes...

A. =B2
B. =C3
C. =C4
D. =D4

13. Copying a formula across to the right changes...

A. Absolute references
B. Relative column letters
C. Nothing
D. Relative row numbers

14. Extra: =A$1*$A2 in B2 copied to C3 becomes...

A. =B$2*$B3
B. =B1*A3
C. =A$1*$A2
D. =B$1*$A3

15. Nimal's total =SUM(B2:E2) is...

A. 275
B. 353
C. 72.4
D. 233

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Structured Questions

1. Define relative and absolute references with one example each. *(4 marks)*

> Relative changes when copied, e.g. B2. Absolute stays fixed, e.g. F1.

2. D2 has =B2*C2. Write the formulas and results in D3, D4 and D5 after copying down. *(3 marks)*

> D3 =B3*C3 = 180; D4 =B4*C4 = 160; D5 =B5*C5 = 150.

3. F1 holds the discount rate 0.05. Write a formula for E2 that can be copied down to E5 and give all results. *(4 marks)*

> =D2*F1; 30, 9, 8, 7.5; total 54.5.
>
> **Relative: =B2*C2 copied down**
>
> - D2 =B2*C2
> - D3 =B3*C3
> - D4 =B4*C4
> - D5 =B5*C5
>
> Row numbers change: B3, B4, B5...
>
> **Absolute: =D2*F1 copied down**
>
> - E2 =D2*F1
> - E3 =D3*F1
> - E4 =D4*F1
> - E5 =D5*F1
>
> F1 stays locked (F4 adds $)
>
> Model answer.

4. Explain why =D2*F1 gives wrong answers when copied down. *(2 marks)*

> F1 changes to F2, F3, F4 which are empty, so results are 0.

5. Write, in order, the four reference forms produced by pressing F4 on A1 in Excel. *(2 marks)*

> A1, A$1, $A1, A1.

Summary

- Relative references (B2) change when a formula is copied.
- Copy down → rows change; copy across → columns change.
- Absolute references (F1) never change.
- Use $ for a constant cell such as a rate.
- A relative constant moves to empty cells and gives 0.
- F4 cycles F1 → F1 → F$1 → $F1.
- Mixed references (extra) lock only a row or a column.
- Write once, copy with the fill handle or Ctrl+D.

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MCQ answer key – 7.6

1. **D** – Both locked.
2. **B** – Rows +1.
3. **C** – 1 × 150.
4. **A** – F1 fixed.
5. **B** – 600 × 0.05.
6. **C** – F2 is empty.
7. **A** – 600+180+160+150.
8. **B** – 1090 × 0.05.
9. **A** – First press = absolute.
10. **C** – $ before 1.
11. **D** – Rows +4.
12. **C** – +1 column, +2 rows.
13. **B** – Across = columns.
14. **D** – Mixed.
15. **A** – 72+65+58+80.

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G.C.E. O/L Grade 10 ICT · Lesson 7

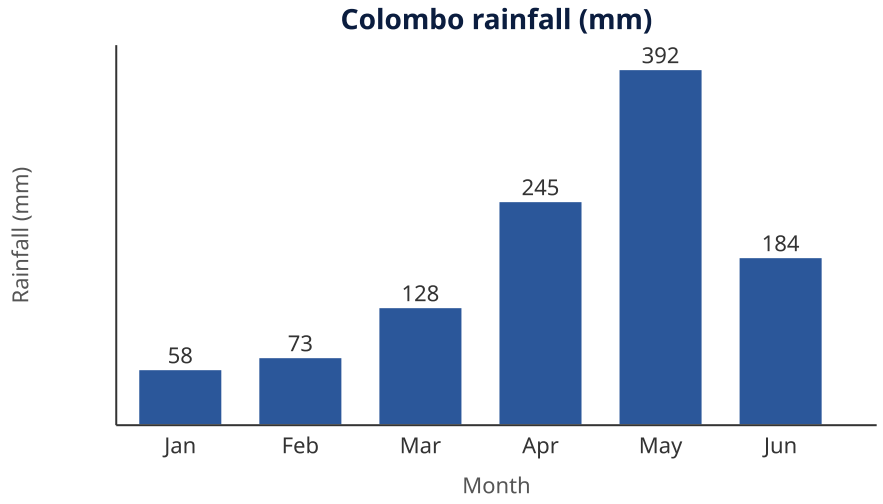
7.7 Spreadsheet Charts: Column, Bar, Line and Pie

A **chart** shows numbers as a picture so patterns are easy to see. You select the data range (labels + values) and choose Insert → Chart. This note uses Colombo rainfall (Jan–Jun, total 1080 mm), student ICT marks and the shop bill to build column, bar, line and pie charts, and shows which chart fits which data.

1. Making a chart

- Select A1:B7 (month names and rainfall).
- **Excel**: Insert → Charts → Column. **Calc**: Insert → Chart (Chart Wizard). **Sheets**: Insert → Chart, then Chart editor → Chart type.
- The chart is linked: change B6 and the chart updates.

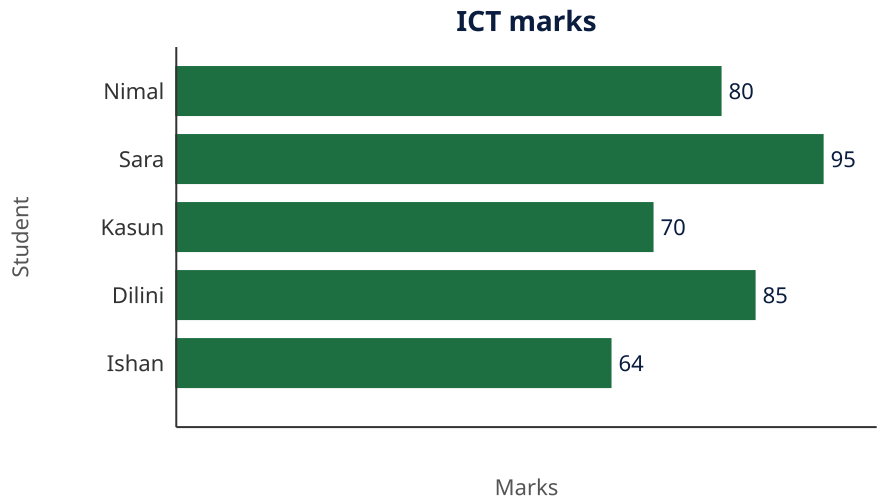
2. Column chart



Column chart: vertical bars compare rainfall in each month. May is highest (392 mm), January lowest (58 mm).

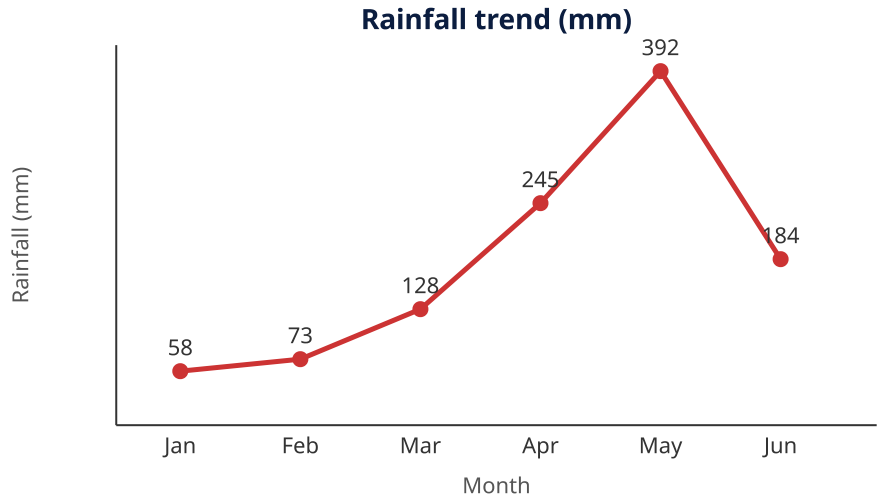
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3. Bar chart



Bar chart: horizontal bars compare ICT marks; good when labels (names) are long.

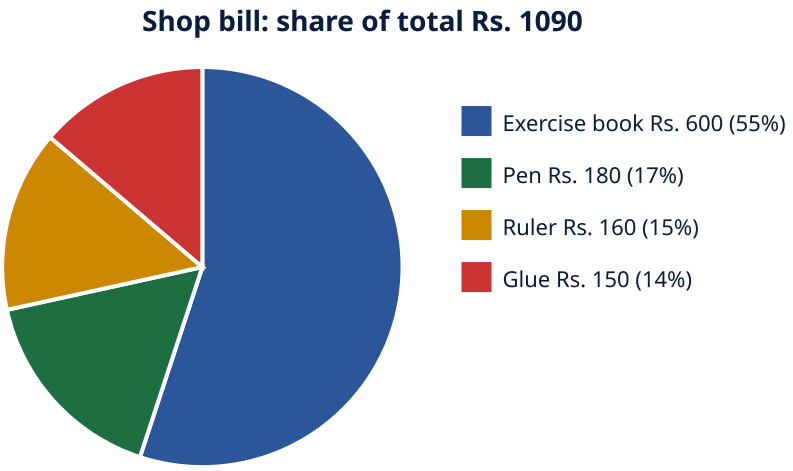
4. Line chart



Line chart: shows the trend over time – rainfall rises to May with the south-west monsoon, then falls in June.

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5. Pie chart



Pie chart: parts of a whole – how the Rs. 1090 bill is shared. Exercise books are Rs. 600 (about 55%).

6. Which chart for which data?

Chart	Best for	Example
Column	Comparing categories (vertical)	Rainfall per month
Bar	Comparing categories with long labels (horizontal)	Marks of students
Line	Trend / change over time	Temperature over a week
Pie	Parts of one whole (one data series)	Share of the bill

7. Chart elements

- **Chart title** – what the chart shows.
- **Axis titles** – e.g. horizontal (x) axis “Month”, vertical (y) axis “Rainfall (mm)”.
- **Legend** – key that names each data series or pie slice.
- **Data labels** – the value written on each bar, point or slice.
- Excel: Chart Elements (+) button. Calc: Insert → Titles/Legend/Data Labels in edit mode. Sheets: Chart editor → Customise.

> NEW 2026 2026: Excel **Copilot/Analyze Data** and Sheets **Explore**/Gemini can suggest charts. Always check that the suggested chart type suits the data and that titles and units are correct.

Key Words

Chart – A picture of data from a range of cells.

Column chart – Vertical bars comparing categories.

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Bar chart – Horizontal bars comparing categories.	**Line chart** – Points joined by a line to show a trend over time.
Pie chart – A circle divided into slices showing parts of a whole.	**Data series** – A set of related values plotted together.
Chart title – Heading that says what the chart shows.	**Axis title** – Label for the horizontal or vertical axis.
Legend – Key naming each series or slice.	**Data labels** – Values shown on bars, points or slices.
X-axis – Horizontal axis, usually categories or time.	**Y-axis** – Vertical axis, usually values.

Sample Q&A

1. Which chart shows a trend over time?

> **Answer:** A line chart.

2. Which chart shows parts of a whole?

> **Answer:** A pie chart.

3. Difference between a column and a bar chart?

> **Answer:** Column bars are vertical; bar chart bars are horizontal.

4. Name four chart elements.

> **Answer:** Chart title, axis titles, legend, data labels.

5. Which month had the most rain and how much?

> **Answer:** May, 392 mm.

6. What happens to a chart if the data changes?

> **Answer:** It updates automatically because it is linked to the cells.

MCQ

1. Best chart for monthly temperature over a year?

A. Line
B. Pie
C. None
D. Bar only

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2. Best chart for share of a household budget?

A. Line
B. Scatter
C. Column
D. Pie

3. A chart with horizontal bars is a…

A. Line chart
B. Bar chart
C. Pie chart
D. Column chart

4. The key that names each series is the…

A. Data label
B. Gridline
C. Legend
D. Axis title

5. Values written on each column are…

A. Data labels
B. Chart title
C. Legend
D. Axis

6. Total Jan–Jun rainfall (B2:B7) is…

A. 180 mm
B. 1080 mm
C. 980 mm
D. 1180 mm

7. =AVERAGE(B2:B7) for the rainfall is…

A. 216
B. 392
C. 180
D. 1080

8. =MAX(B2:B7) − =MIN(B2:B7) for the rainfall is…

A. 264
B. 319
C. 450
D. 334

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9. In the pie chart, exercise books (Rs. 600 of 1090) are about…

A. 55%
B. 45%
C. 50%
D. 60%

10. In Excel, which menu inserts a chart?

A. Insert
B. View
C. Home
D. Review

11. The label 'Rainfall (mm)' on the vertical axis is an…

A. Data label
B. Chart title
C. Axis title
D. Legend

12. Before inserting a chart you must first…

A. Save as PDF
B. Sort Z to A
C. Select the data range
D. Delete the labels

13. A pie chart can show how many data series?

A. Two
B. One
C. Five
D. Any number

14. In LibreOffice Calc a chart is made with…

A. Format → Cells
B. Tools → Macros
C. Data → Sort
D. Insert → Chart

15. When B6 (May) changes, the chart…

A. Must be redrawn
B. Updates automatically
C. Is deleted
D. Shows #REF!

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Structured Questions

1. Name the most suitable chart for each: (a) rainfall trend over months (b) share of a bill (c) marks of five students. *(3 marks)*

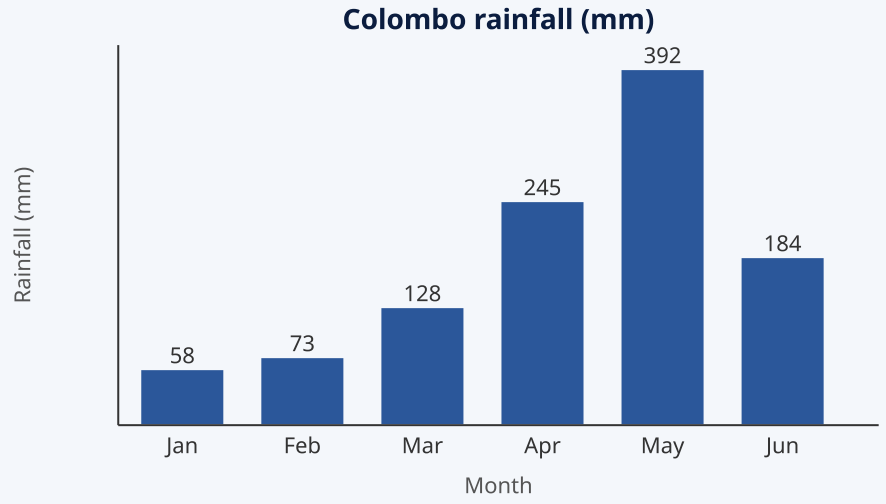
> (a) Line (b) Pie (c) Column or bar.

2. Describe the steps to make a column chart of A1:B7 in Excel. *(3 marks)*

> Select A1:B7 → Insert → Charts → Column → add title and axis titles.

3. Label the elements of the column chart shown. *(4 marks)*

> Chart title 'Colombo rainfall (mm)'; x-axis title 'Month'; y-axis title 'Rainfall (mm)'; data labels on each column.



Model answer.

4. Give formulas for the total, average and highest rainfall in B2:B7 and their results. *(3 marks)*

> =SUM(B2:B7) = 1080; =AVERAGE(B2:B7) = 180; =MAX(B2:B7) = 392.

5. Why should you check a chart suggested by Copilot or Analyze Data? *(2 marks)*

> AI may choose an unsuitable chart type, wrong range or missing units; the user is responsible for accuracy.

Summary

- Charts turn numbers into pictures.
- Select labels + values, then Insert → Chart.
- Column: vertical bars comparing categories.
- Bar: horizontal bars, good for long labels.
- Line: trend over time.

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- Pie: parts of one whole.
- Elements: title, axis titles, legend, data labels.
- Charts update when data changes; check AI-suggested charts.

MCQ answer key – 7.7

1. **A** – Trend.
2. **D** – Parts of whole.
3. **B** – Horizontal.
4. **C** – Legend.
5. **A** – Data labels.
6. **B** – =SUM(B2:B7).
7. **C** – 1080 ÷ 6.
8. **D** – 392 − 58.
9. **A** – 600 ÷ 1090 × 100.
10. **A** – Insert → Charts.
11. **C** – Axis title.
12. **C** – Select data.
13. **B** – One series.
14. **D** – Chart Wizard.
15. **B** – Linked.

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