



SuperNovaSchool®
L E A R N T O B E D I S T I N C T

Computing

Grade 5

(Instructional Resource)

UNIT/STRAND	Unit 2 Managing Data
TOPIC	2.1 Collecting and Storing Data
Sub Topics	
Session	2025-26
Prepared By	Ms. Anooshay

2.1 Collecting and Storing Data

What is statistical investigation?

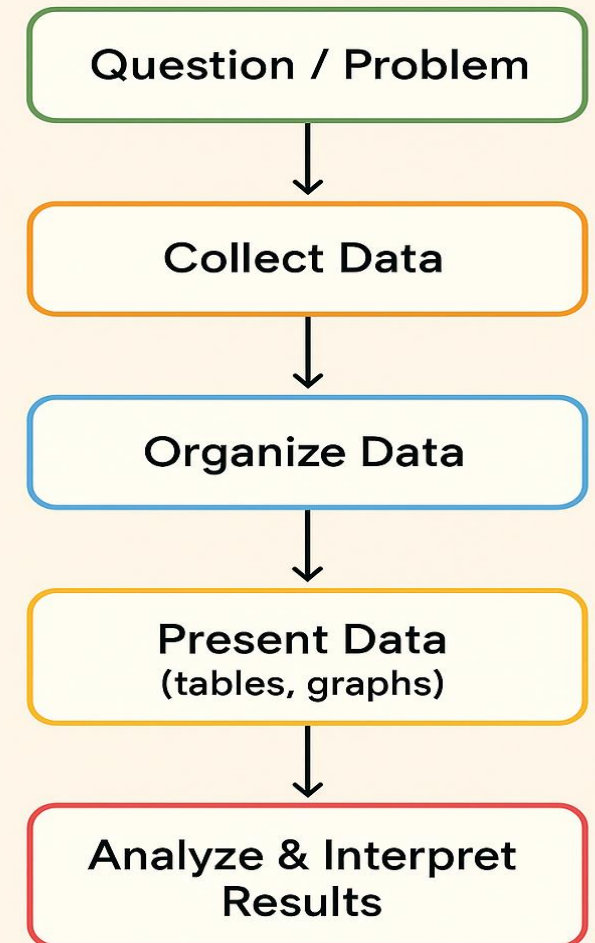
- Statistical Investigation: A statistical investigation is the process of collecting and analyzing data to find useful information.

MEANING OF STATISTICAL INVESTIGATION

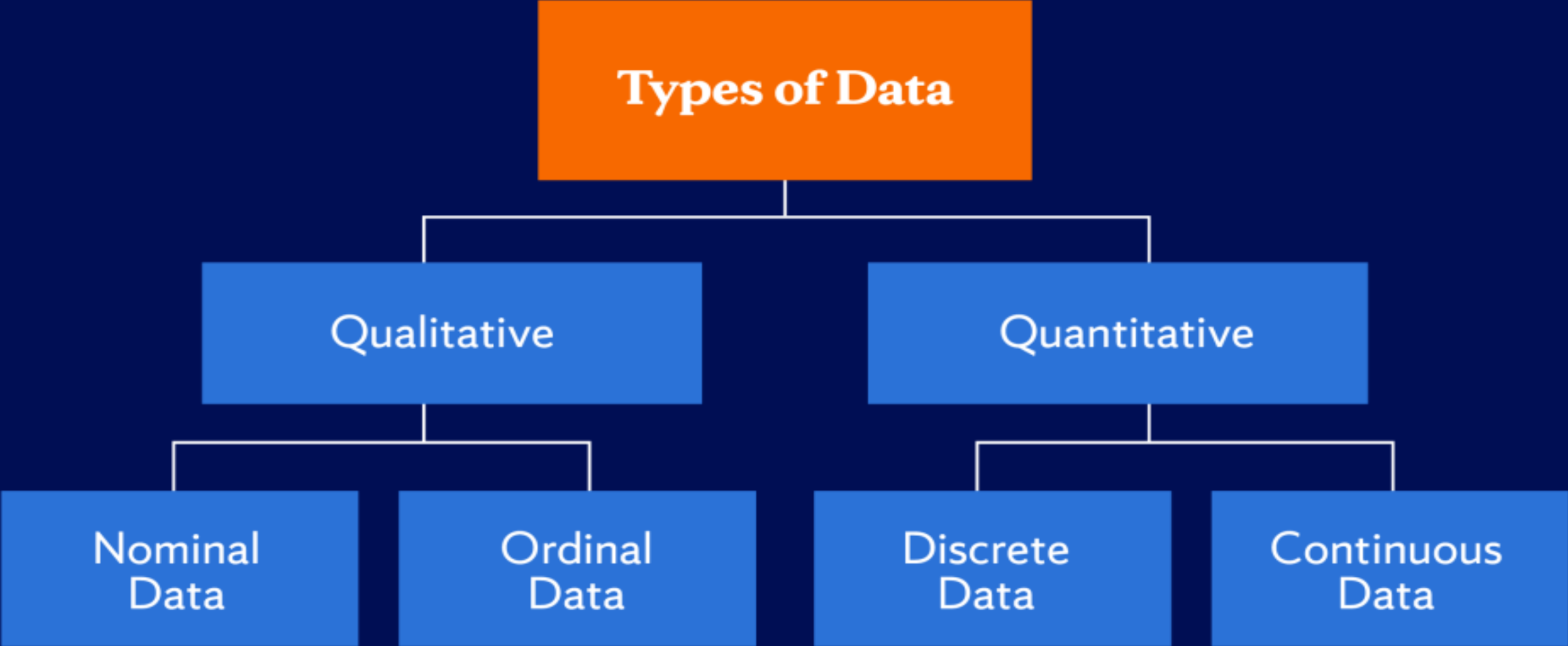
Investigation means to find out or discover knowledge.

Statistical investigation is that discovery of knowledge which is done through statistical method.

Statistical Investigation



Types of Data



```
graph TD; A[Types of Data] --> B[Qualitative]; A --> C[Quantitative]; B --> D[Nominal Data]; B --> E[Ordinal Data]; C --> F[Discrete Data]; C --> G[Continuous Data]
```

Qualitative

Quantitative

Nominal
Data

Ordinal
Data

Discrete
Data

Continuous
Data

2.1 Planning a Statistical Investigation

Qualitative data/ Categorical Data

Nominal Data	Ordinal Data
No order or ranking	Has a specific order or ranking
Not ordered	Ordered
Example: Gender (male, female) eye color (blue, brown) city (Lahore, Karachi) Dog breed	Example: Grades (A, B, C) satisfaction level (happy, neutral, sad) Ranking (1st, 2nd, 3rd)

2.1 Planning a Statistical Investigation

Quantitative Data/ Numerical Data

Discrete Data	Continuous Data
Data that can be counted	Data that can be measured
Only whole numbers	Can have any value , including decimals
Number of students, number of cars, goals scored	Height, weight, temperature, time

2.1 Collecting and Storing Data

Types of data

- 1. Categorical data: Information grouped into categories (e.g., colors, names of fruits).
- 2. Discrete data: Numerical and counted in whole numbers (e.g., number of books, students).
- 3. Continuous data: Numerical and measured, not counted (e.g., height, weight, temperature).

2.1 Planning a Statistical Investigation

Tools We Use When Working With Data

- We use various digital tools to collect, store, organize, and analyze data, including:
 - 1. Data loggers
 - 2. Spreadsheets
 - 3. Databases
 - 4. Forms
 - 5. Document production tools

2.1 Collecting and Storing Data

Data Loggers

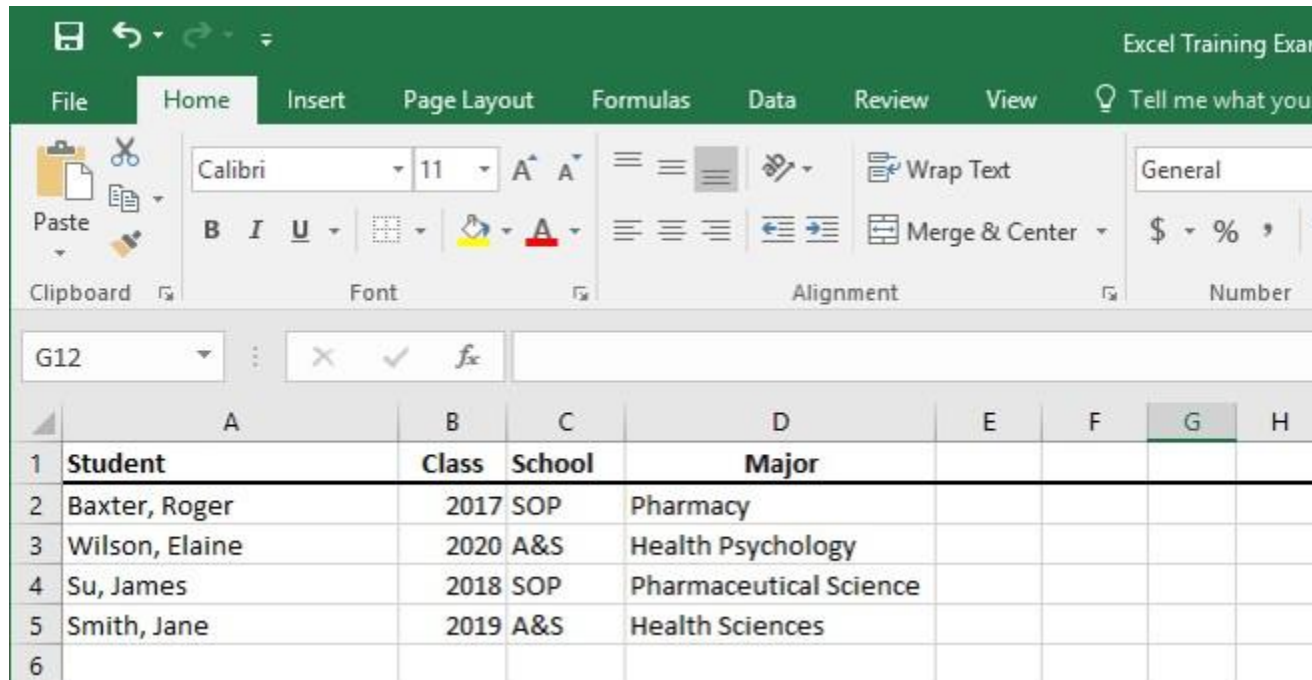
- Data loggers are electronic tools that automatically collect information over time, often used in experiments to record temperature, light, or sound without human help.



2.1 Collecting and Storing Data

Spreadsheets

- Spreadsheets are digital tables for storing and calculating data. Programs like Microsoft Excel or Google Sheets help us organize data into rows and columns, performing calculations with formulas



The screenshot shows the Microsoft Excel application window. The title bar reads "Excel Training Exam". The ribbon is set to "Home", showing tabs for File, Home, Insert, Page Layout, Formulas, Data, Review, and View. The "Home" ribbon is active, displaying groups for Clipboard, Font, Alignment, and Number. The font is set to Calibri, size 11. The alignment group shows "Wrap Text" and "Merge & Center" options. The formula bar shows "G12" and a formula icon. The spreadsheet grid has columns A through H and rows 1 through 6. The data is as follows:

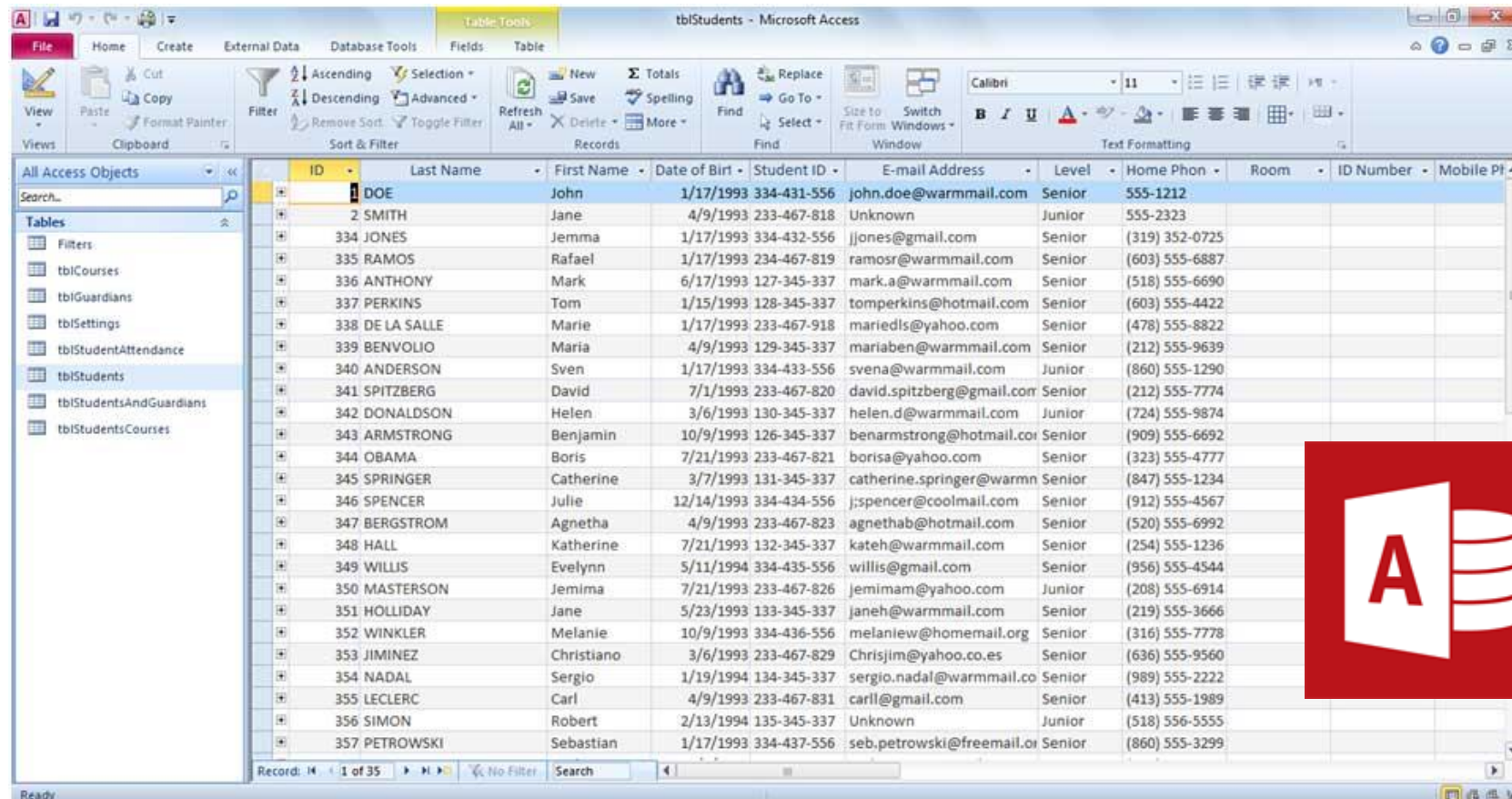
	A	B	C	D	E	F	G	H
1	Student	Class	School	Major				
2	Baxter, Roger	2017	SOP	Pharmacy				
3	Wilson, Elaine	2020	A&S	Health Psychology				
4	Su, James	2018	SOP	Pharmaceutical Science				
5	Smith, Jane	2019	A&S	Health Sciences				
6								



2.1 Collecting and Storing Data

Databases

- Databases store large amounts of organized data. They are used in schools, libraries, and businesses. A database contains tables, each with fields (columns) and records (rows).



The screenshot displays the Microsoft Access application window titled 'tblStudents - Microsoft Access'. The interface includes a ribbon with tabs for File, Home, Create, External Data, Database Tools, Fields, and Table. The 'Table Tools' ribbon is active, showing options for View, Filter, Sort & Filter, Records, Find, and Text Formatting. On the left, the 'All Access Objects' pane shows a list of tables, with 'tblStudents' selected. The main area displays a table with the following columns: ID, Last Name, First Name, Date of Birth, Student ID, E-mail Address, Level, Home Phone, Room, ID Number, and Mobile Phone. The table contains 35 records, with the first record being John Doe.

ID	Last Name	First Name	Date of Birth	Student ID	E-mail Address	Level	Home Phone	Room	ID Number	Mobile Phone
1	DOE	John	1/17/1993	334-431-556	john.doe@warmmail.com	Senior	555-1212			
2	SMITH	Jane	4/9/1993	233-467-818	Unknown	Junior	555-2323			
334	JONES	Jemma	1/17/1993	334-432-556	jones@gmail.com	Senior	(319) 352-0725			
335	RAMOS	Rafael	1/17/1993	234-467-819	ramosr@warmmail.com	Senior	(603) 555-6887			
336	ANTHONY	Mark	6/17/1993	127-345-337	mark.a@warmmail.com	Senior	(518) 555-6690			
337	PERKINS	Tom	1/15/1993	128-345-337	tomperkins@hotmail.com	Senior	(603) 555-4422			
338	DE LA SALLE	Marie	1/17/1993	233-467-918	mariedls@yahoo.com	Senior	(478) 555-8822			
339	BENVOLIO	Maria	4/9/1993	129-345-337	mariaben@warmmail.com	Senior	(212) 555-9639			
340	ANDERSON	Sven	1/17/1993	334-433-556	svena@warmmail.com	Junior	(860) 555-1290			
341	SPITZBERG	David	7/1/1993	233-467-820	david.spitzberg@gmail.com	Senior	(212) 555-7774			
342	DONALDSON	Helen	3/6/1993	130-345-337	helen.d@warmmail.com	Junior	(724) 555-9874			
343	ARMSTRONG	Benjamin	10/9/1993	126-345-337	benarmstrong@hotmail.com	Senior	(909) 555-6692			
344	OBAMA	Boris	7/21/1993	233-467-821	borisa@yahoo.com	Senior	(323) 555-4777			
345	SPRINGER	Catherine	3/7/1993	131-345-337	catherine.springer@warmmail.com	Senior	(847) 555-1234			
346	SPENCER	Julie	12/14/1993	334-434-556	jspencer@coolmail.com	Senior	(912) 555-4567			
347	BERGSTROM	Agnetha	4/9/1993	233-467-823	agnetha@hotmail.com	Senior	(520) 555-6992			
348	HALL	Katherine	7/21/1993	132-345-337	kateh@warmmail.com	Senior	(254) 555-1236			
349	WILLIS	Evelynn	5/11/1994	334-435-556	willis@gmail.com	Senior	(956) 555-4544			
350	MASTERSON	Jemima	7/21/1993	233-467-826	jemimam@yahoo.com	Junior	(208) 555-6914			
351	HOLLIDAY	Jane	5/23/1993	133-345-337	janeh@warmmail.com	Senior	(219) 555-3666			
352	WINKLER	Melanie	10/9/1993	334-436-556	melaniew@homemail.org	Senior	(316) 555-7778			
353	JIMINEZ	Christiano	3/6/1993	233-467-829	Chrisjim@yahoo.com.es	Senior	(636) 555-9560			
354	NADAL	Sergio	1/19/1994	134-345-337	sergio.nadal@warmmail.com	Senior	(989) 555-2222			
355	LECLERC	Carl	4/9/1993	233-467-831	carll@gmail.com	Senior	(413) 555-1989			
356	SIMON	Robert	2/13/1994	135-345-337	Unknown	Junior	(518) 556-5555			
357	PETROWSKI	Sebastian	1/17/1993	334-437-556	seb.petrovski@freemail.org	Senior	(860) 555-3299			



2.1 Collecting and Storing Data

Forms

- A form is a list of questions with spaces for people to mark or write their responses. Forms can be on paper or on a screen.
- Instead of entering data into a table, users fill out a digital form, which sends the data to a spreadsheet or database.

JOB APPLICATION
Harmont Knapp Group
100 W. Platinum Ave. Detroit, MI 48208

248-568-8884 | info@harmontknapp.com | www.harmontknapp.com

PERSONAL INFORMATION

First Name	Last Name
Gender	Phone
☐ Female ☐ Male	
Date of Birth	Email
Address	Street
City	ZIP Code

Contact

First name

Last name

Phone

Date and time
Day Month Year Time

Seating preference
☐ Indoor
☐ Outdoor

Additional requests

☐ Yes, subscribe me to your newsletter.

Request booking



Google Forms

2.1 Collecting and Storing Data

Document production tool

- Document production tools are programs that allow us to put text and pictures together to create a report or presentation. Examples of this kind of software includes word processing and presentation software.





SuperNovaSchool®
L E A R N T O B E D I S T I N C T

Computing

Grade 5

(Instructional Resource)

UNIT/STRAND	Unit 2 Managing Data
TOPIC	2.2 Representing Data
Sub Topics	
Session	2025-26
Prepared By	Ms. Anooshay

2.2 Representing Data

Representing Data

- Data can be represented in many forms, such as tables, charts, and graphs. Choosing the right method makes data easier to understand

2.2 Representing Data

Tables

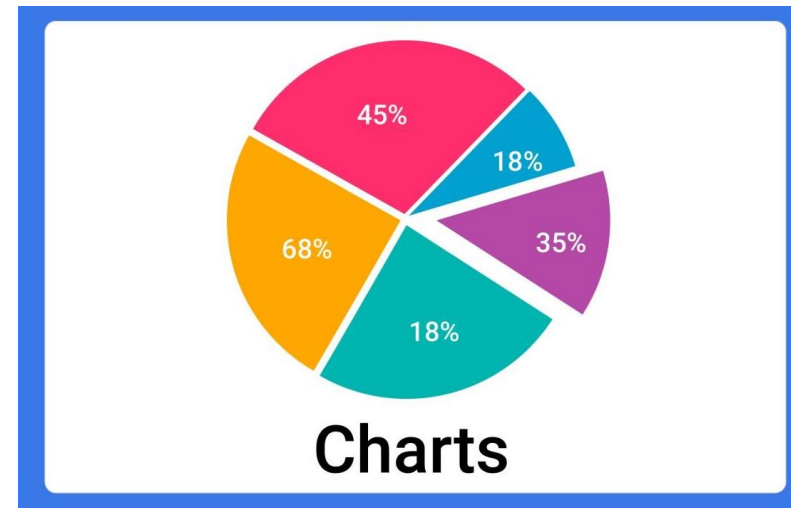
- Tables organize data into rows and columns. They help in listing and comparing information.

	Total defects	A	B	C	D	E
A4636	131	37	21	28		45
A2524	86	20	24	21	1	20
A3713	75	17	13	18		27
A4452	73	5	33	17		18
A4088	72	14	16	12	2	28
A2103	68	14	13	14	1	26
A2156	68	16	13	19	2	18
A3681	66	12	16	9	1	28
A1366	50	11	15	12		12
A2610	39	5	7	12		15
Total	728	151	171	162	7	237

2.2 Representing Data

Chart and Graphs

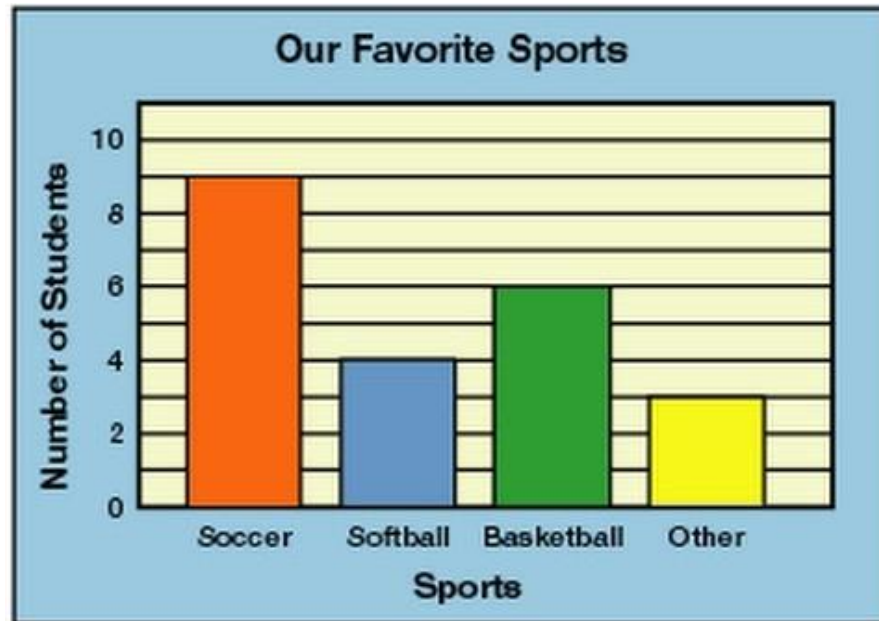
- Charts and graphs turn numbers into visual representations.
- Bar charts show comparisons
- Pie charts show parts of a whole
- Line graphs show changes over time.



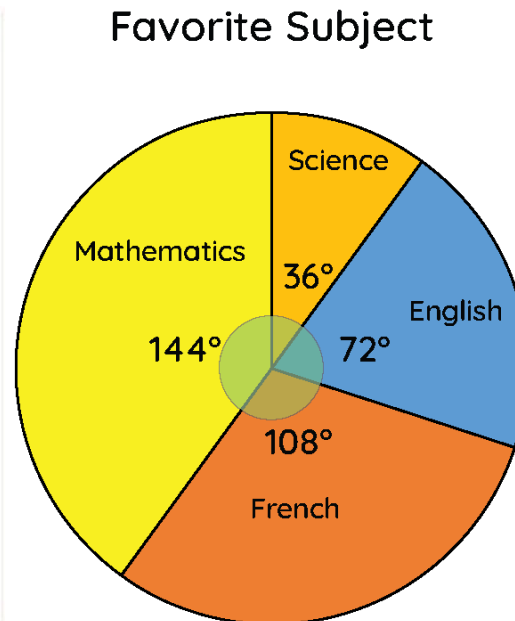
2.2 Representing Data

Representing Categorical and discrete data

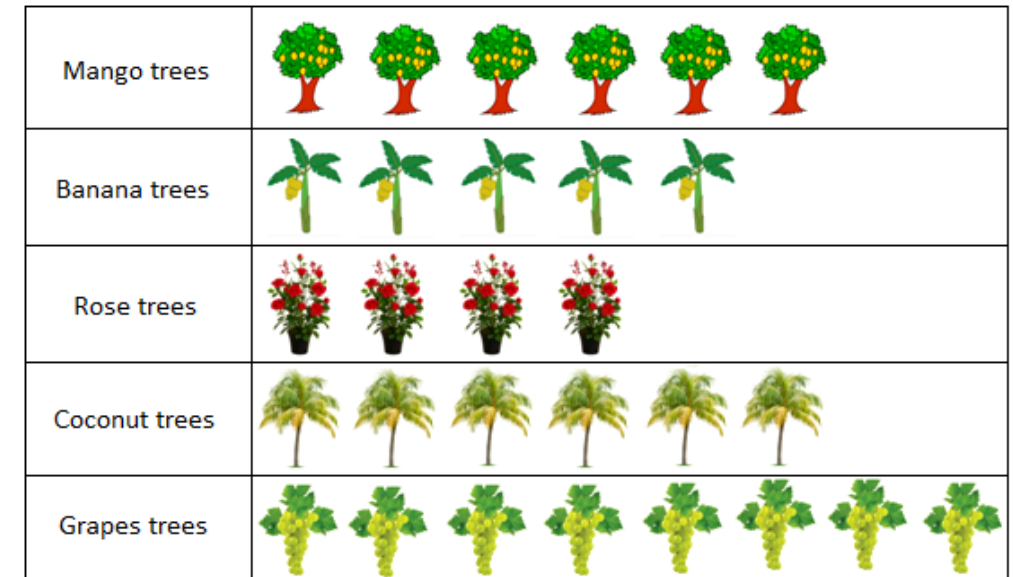
- Categorical and discrete data can be shown **using bar graphs, pie charts or pictographs**, making it easier to compare categories or countable items.



Bar charts



Pie charts

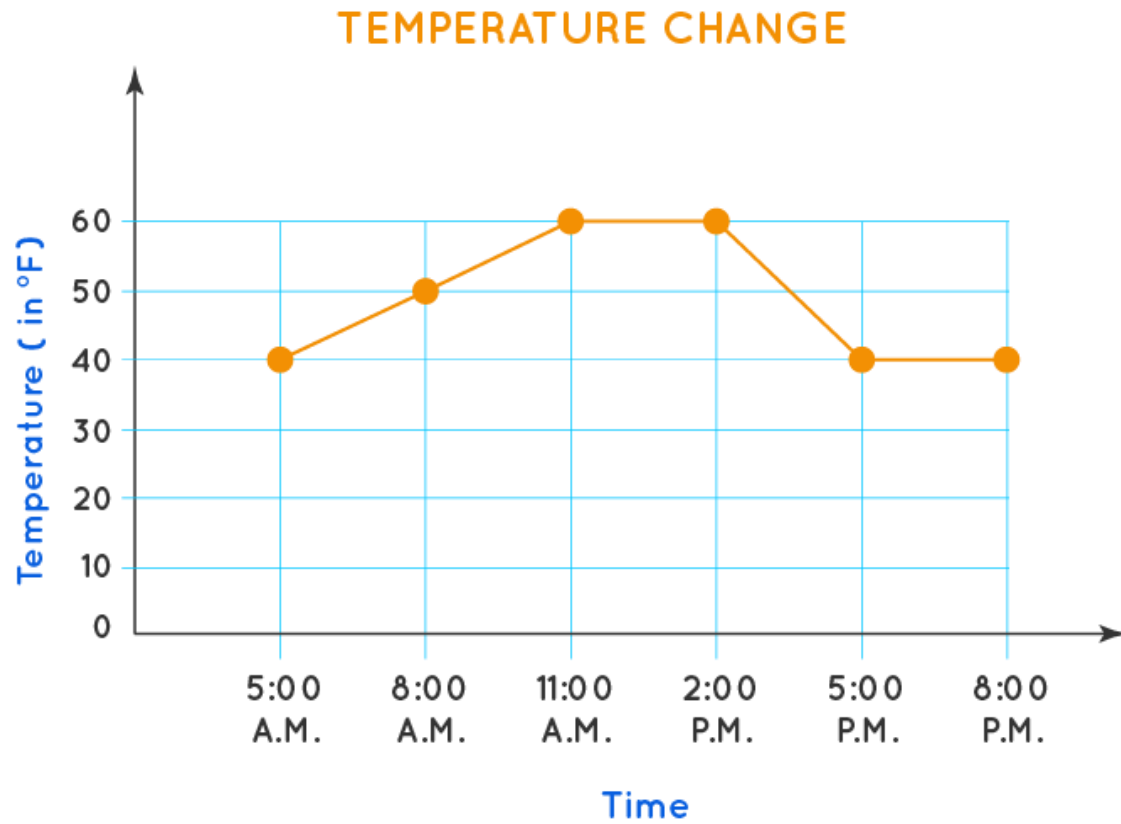


Histogram

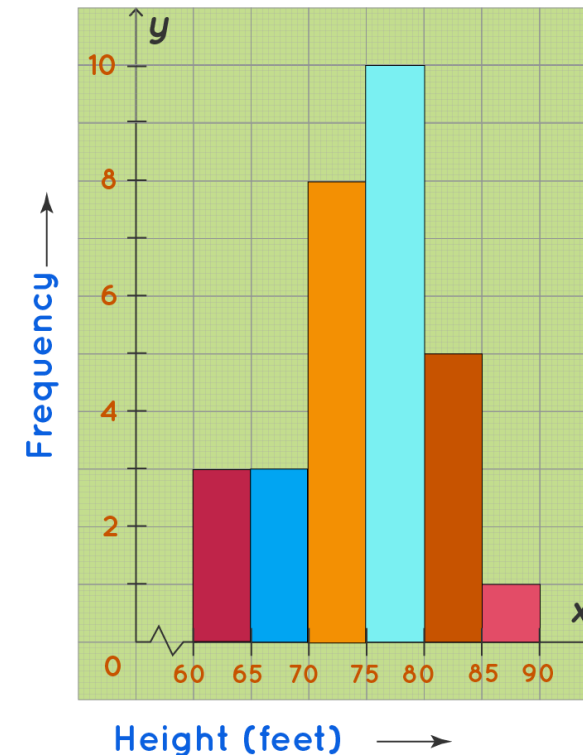
2.2 Representing Data

Representing continuous data

- Continuous data is best shown **using line graphs or histograms**, as these show gradual changes over time or within ranges.



Height of Black Cherry Trees



2.2 Representing Data

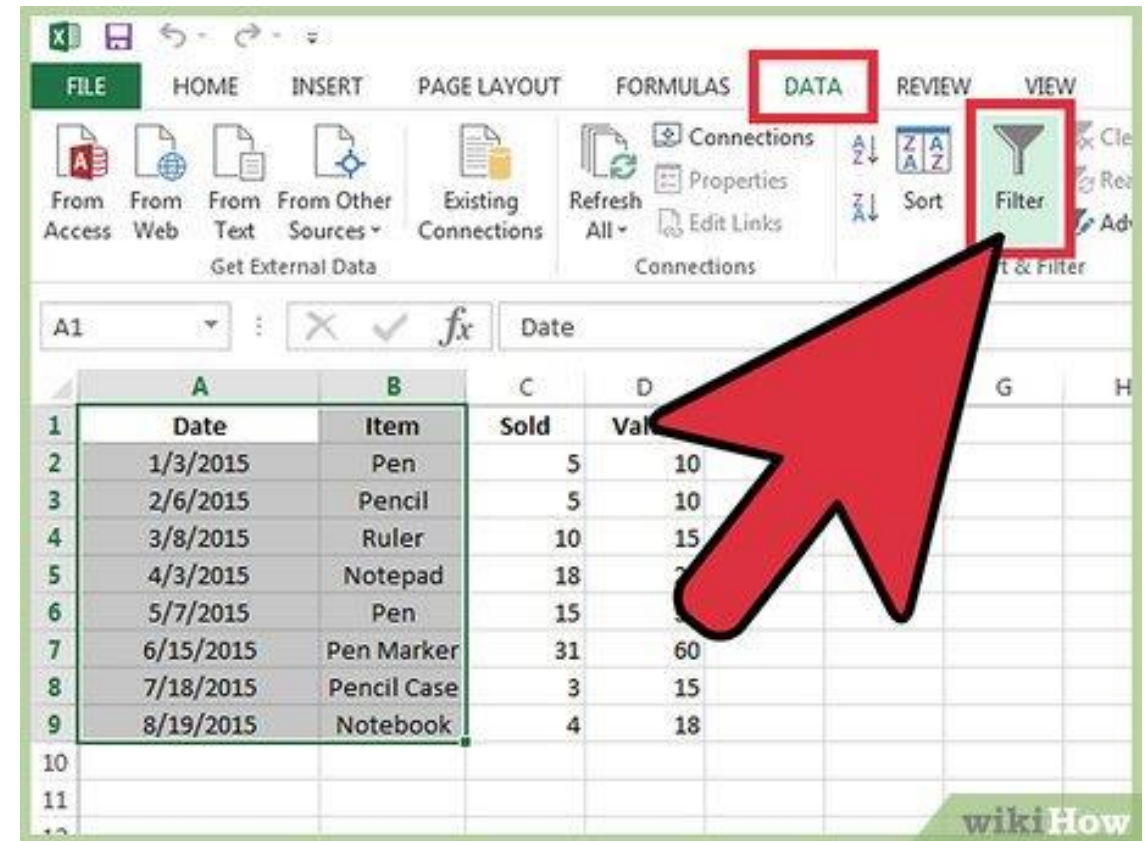
Modifying data for different criteria's

- We may need to change how data is shown depending on the audience or the question being asked. For example, we could choose a different type of chart or highlight specific parts of the data

2.2 Representing Data

Filtering

- Filtering shows only the data that meets certain conditions. For example, in a student list, we could filter to show only students with scores above 80.



2.2 Representing Data

Sorting

- Sorting arranges data in a specific order, like smallest to largest or alphabetically. It helps us find information quickly.



ComputerHope.com

The screenshot shows the Microsoft Excel ribbon with the 'Data' tab selected. The 'Sort & Filter' group is visible, with the 'Sort' button highlighted. Below the ribbon, a portion of an Excel spreadsheet is shown with columns A, B, C, and D, and rows 1 through 4. The data includes names, surnames, genders, and birth dates.

	A	B	C	D
1	ID	Surname	Gender	Birth
2	1	Krause	female	19
3	2	Jones	male	1945
4	3	McAfee	female	1982

Sort

Show the Sort dialog box to sort data based on several criteria at once.

Press F1 for more help.

2.2 Representing Data

What Programs Can We Use to Create Charts?

- Programs like Excel, Google Sheets, and online graph tools are user-friendly and allow us to create and modify various types of charts easily.



Excel



Google
Sheets

2.2 Representing Data

Changing the way we display data

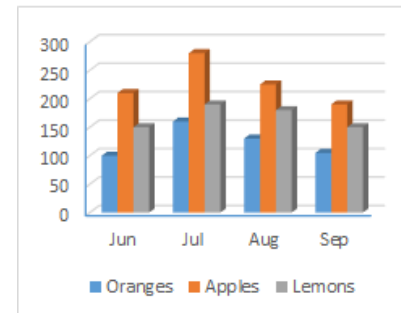
- Sometimes we need to change how data is presented. For example, changing from a bar chart to a pie chart might make the data clearer and easier to understand.

2.2 Representing Data

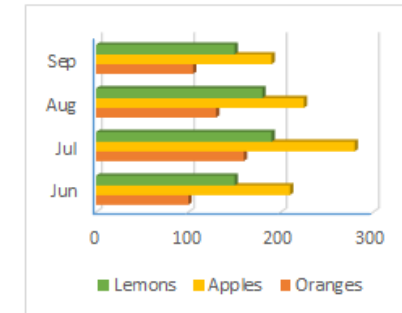
Changing the chart type

- Different chart types are chosen based on the data and the information we want to show. It's important to pick the type that best represents the data.

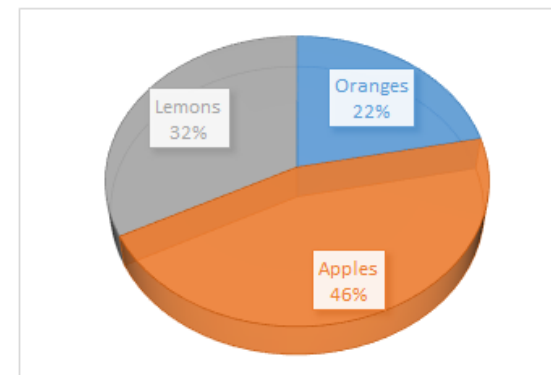
3-D Column chart



3-D Bar chart



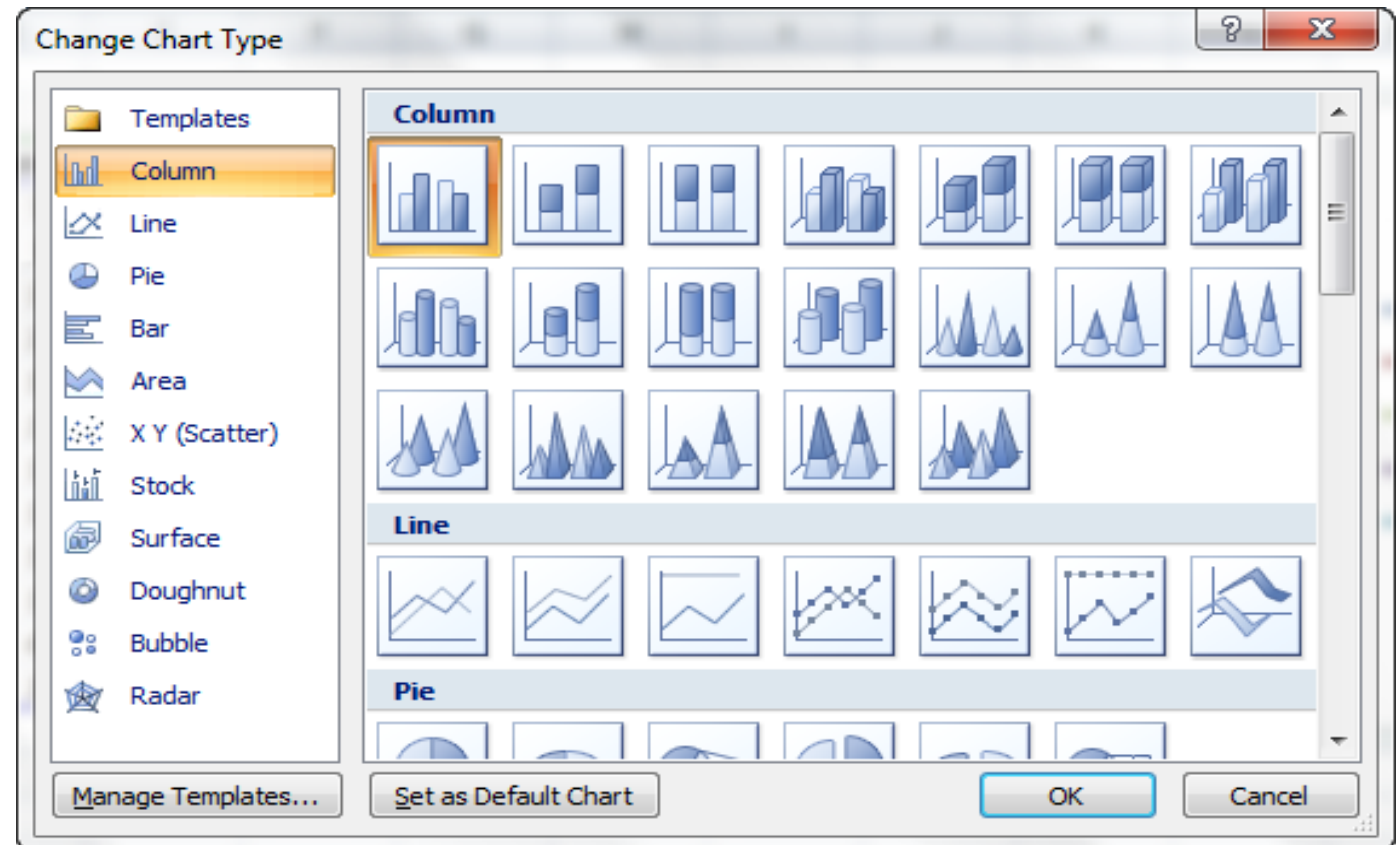
3-D Pie chart



2.2 Representing Data

Changing the chart style and labels

- We can modify chart colors, fonts, and labels to make charts more attractive and clear. Labels help the reader understand what each part of the chart represents



2.2 Representing Data

Doing Calculations in spreadsheet

- Spreadsheets can perform calculations such as addition, subtraction, multiplication, or division using simple formulas to find totals or averages.

The screenshot shows the Microsoft Excel interface. The ribbon at the top includes FILE, HOME, INSERT, PAGE LAYOUT, DATA, REVIEW, VIEW, and FORMULAS. The HOME ribbon is active, showing the Clipboard group (Paste, Cut, Copy, Format Painter) and the Font group (Font face, Size, Bold, Italic, Underline, Text color, Background color). The FORMULAS ribbon is also visible, showing the AutoSum dropdown menu with options: Sum, Average, Count Numbers, Max, Min, and More Functions... The Max option is highlighted. The spreadsheet data is as follows:

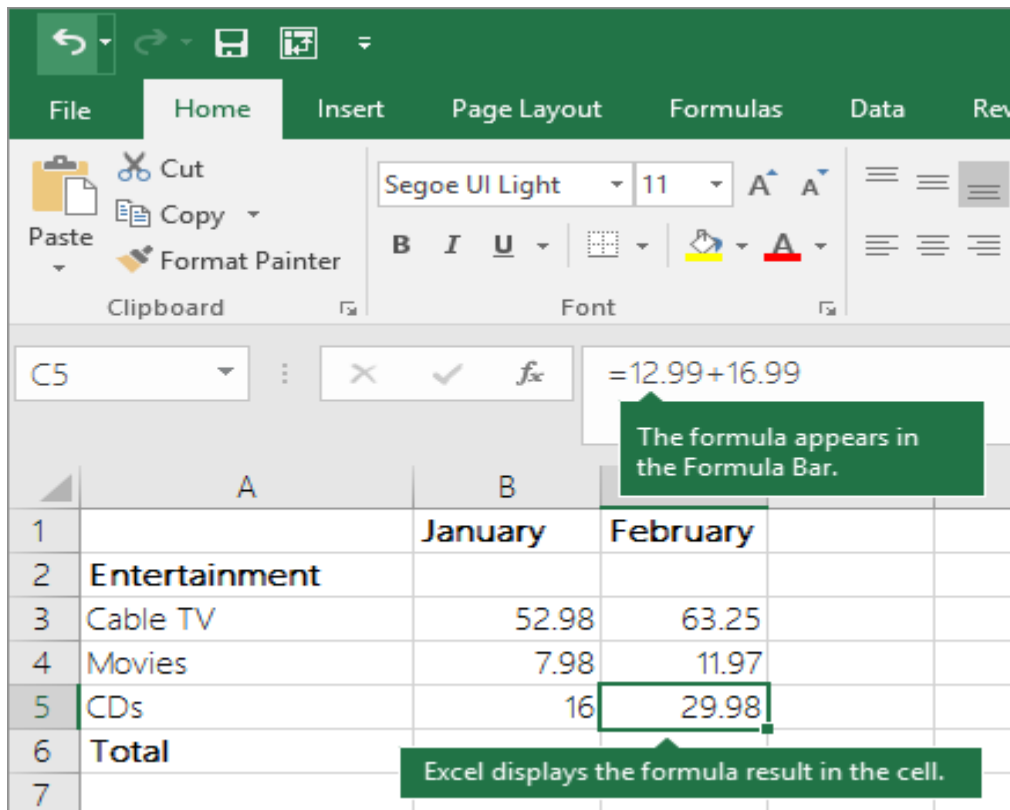
	A	B	C	D	E
1	Item	Jan	Feb	Mar	
2	Apples	\$120	\$320	\$200	
3	Oranges	\$200	\$190	\$0	
4	Lemons	\$220	\$210	\$220	
5	Grapes	\$180	\$170	\$240	
6	Peaches	\$300	\$310	\$190	
7	Max	=MAX(B2:B6)			

The formula bar shows the formula `=MAX(B2:B6)`. An orange arrow points from the Max option in the AutoSum dropdown menu to the formula bar. Another orange arrow points from the formula bar to the cell B7, which contains the formula `=MAX(B2:B6)`.

2.2 Representing Data

Calculations using formula

- A formula is an equation used to perform calculations. It starts with an equals sign (=). For example, =A1+B1 adds the values in cells A1 and B1 together.



	A	B	
1		January	February
2	Entertainment		
3	Cable TV	52.98	63.25
4	Movies	7.98	11.97
5	CDs	16	29.98
6	Total		
7			

2.2 Representing Data

Calculations using functions

- Functions are built-in formulas that simplify calculations. For example, the SUM function can quickly add up many cells instead of doing it manually.

2.2 Representing Data

The SUM Function

- The SUM function adds all the numbers in a range of cells. Example:
`=SUM(A1:A5)` adds the values from cells A1 to A5.

The screenshot shows the Microsoft Excel interface. The 'HOME' tab is selected in the ribbon. The 'AutoSum' button, represented by a sigma symbol (Σ), is highlighted in the 'Editing' group. An orange arrow points from this button to the formula bar, which displays `=SUM(B2:B6)`. Another orange arrow points from the formula bar to the range B2:B6 in the spreadsheet. The spreadsheet data is as follows:

	A	B	C	D	E	F	G
1	Item	Jan	Feb	Mar			
2	Apples	\$120	\$320	\$200			
3	Oranges	\$200	\$190	\$0			
4	Lemons	\$220	\$210	\$220			
5	Grapes	\$180	\$170	\$240			
6	Peaches	\$300	\$310	\$190			
7	Total	<code>=SUM(B2:B6)</code>					
8							

A tooltip at the bottom of the screen shows the syntax: `SUM(number1, [number2], ...)`.

2.2 Representing Data

The AVERAGE function

- The AVERAGE function calculates the mean (average) of selected numbers. Example: =AVERAGE(B1:B4) finds the average of the numbers in B1 to B4.

F2		fx =AVERAGE(						
	A	B	C	D	E	F	G	H
1	Trainer	Pokeball	Great ball	Ultraball	Master ball	Average		
2	Iva	10	4	1	1	=AVERAGE(		
3	Liam	12	3	0	1	AVERAGE (number1; [number2]; ...)		
4	Jenny	15	1	3	1			
5	Iben	4	2	6	0			
6	Adora	10	4	1	1			
7	Kasper	9	2	1	0			



SuperNovaSchool®
L E A R N T O B E D I S T I N C T

Computing

Grade 5

(Instructional Resource)

UNIT/STRAND	Unit 2 Managing Data
TOPIC	2.3 Using Data
Sub Topics	
Session	2025-26
Prepared By	Ms. Anooshay

2.3 Using Data

What happens when we change data?

- When we change a number in a spreadsheet, the results, such as totals or charts, can also change. This is why accuracy is important.

2.3 Using Data

How changing data affects calculations?

- Formulas update automatically when the data changes. This ensures we get the correct new results without needing to redo everything.

2.3 Using Data

How changing data affects charts?

- If data in a spreadsheet is updated, the chart linked to it will also update, ensuring visuals reflect the latest information.

2.3 Using Data

Finding specific data in spreadsheet

- We can search for specific values in a spreadsheet using tools like the 'Find' feature in Excel or Google Sheets. This helps us quickly locate information.



2.3 Using Data

Search using Find tool

- The 'Find' tool is a search feature that allows you to look through your spreadsheet for specific values or keywords quickly and efficiently.

The screenshot illustrates the use of the Find tool in Microsoft Excel. The 'Home' tab is selected in the ribbon. The 'Find & Select' button is highlighted with a red box. A dropdown menu is open, showing 'Find (Ctrl+F)' and 'Search for text.' highlighted in yellow. Below the ribbon, the formula bar shows '=FIND("o", "john")' and a yellow tooltip explains the syntax: 'FIND(find_text, within_text, [start_num])'. A table with 5 columns (Name, Roll No., Marks obt, Max. marks) and 3 rows of data is shown. Below the table, a green cell labeled 'FIND' and a red-bordered cell containing the number '2' are shown, with a black arrow pointing from the '2' cell to the 'FIND' cell. To the right, a green-bordered box contains '=SEARCH(' and a yellow tooltip shows the syntax: 'SEARCH(find_text, within_text, [start_num])'.

	A	B	C	D
1	Name	Roll No.	Marks obt	Max. marks
2	john	1	23	50
3	elisa	2	39	50