Tabular Presentation and Graphical Representation

Tabular Presentation

There are two main types of statistical tables:

1. Simple Table

A simple table is one in which data are distributed according to **one characteristic only**. It usually consists of two columns:

- The first column represents the **classification of the characteristic or phenomenon** into classes or groups.
- The second column shows the **number of observations** belonging to each class or group.

For clarification, the following two examples are presented:

Table showing the distribution of a number of university students according to their weights (kg):

Classes	fi
60 -62	5
63 − 65	15
66 − 86	45
69 − 71	27
72 − 74	8
$\sum$	100

Table showing the distribution of scholarship students sent abroad according to fields of study:

Field of Study	Basic Sciences	Agricultural Sciences	Veterinary Sciences	Engineering Sciences	Medical Sciences	Social Sciences	Total
Number of Students	25	50	20	75	50	30	250

2. Compound Table:

A compound table is one in which data are distributed according to **two or more characteristics simultaneously**.
For example a **two-way table** (for two characteristics) consists of:

- **Rows:** representing classes or groups of one characteristic.
- **Columns:** representing classes or groups of the other characteristic.
- **Cells:** containing the number of observations or joint frequencies shared by both characteristics.

Table showing the distribution of students in a college according to height and weight:

Weight (kg) Height (cm)	51–60	61–70	71–80	Total
121–140	20	6	4	30
141–160	2	40	10	52
161–180	2	6	10	18
Total	24	52	24	100

Frequency Distribution Table

A frequency distribution table is a simple table consisting of two columns:

- The first column divides the values of the variable into intervals or groups called **classes**.
- The second column shows the number of observations in each class, known as the **frequency**.

Example:
Frequency distribution table of the heights of 80 cotton plants (cm):

Height Classes	Frequency (Number of Plants)
31 – 40	1
41 – 50	2
51 – 60	5
61 – 70	15
71 – 80	25
81 – 90	20
91 – 100	12
Total	80

Some Important Definitions

- **Ungrouped data:** Raw or original data that have been collected but not classified.
- **Grouped data:** Data that have been classified and organized into a frequency distribution table.
- **Classes:** Groups into which the values of a variable are divided, each covering a specific range of values.
- **Class limits:** Each class has two limits: a lower limit and an upper limit.
- **True class limits:** Each class has two true limits: a true lower limit and a true upper limit.
- **Class width:** The range between the class limits. It is preferable for class widths to be equal to facilitate calculations.
- **Class midpoint:** The midpoint of the range between the class limits.
- **Class frequency:** The number of observations falling within the range of that class, denoted by **Fi**. The sum of frequencies must always equal the total number of observations.

Example:

Classes	True Class Limits	Class Midpoint	Frequencies
31 − 40	30.5 − 40.5	35.5	1
41 − 50	40.5 − 50.5	45.5	2
51 − 60	50.5 − 60.5	55.5	5
61 −70	60.5 − 70.5	65.5	15
71 − 80	70.5 − 80.5	75.5	25
81 − 90	80.5 −90.5	85.5	20
91 − 100	90.5 − 100.5	95.5	12
Total			80

Question:

How are the upper class limit, lower class limit, class width, true class limits, class midpoint, and class frequency determined?

- **Lower and upper class limits:** Based on the previous table, 61 represents the lower limit and 70 represents the upper limit of the class.
- **Class width:**

Class width=Upper class limit−Lower class limit+1
 =70−61+1=10= 70 - 61 + 1 = 10=70−61+1=10

(This applies when the data are integers.)

Question:

Are there other methods to calculate class width? Mention them with examples.

True class limits:

- **True lower class limit:**

True lower limit=Class midpoint$-\frac{1}{2}$(Class width =65.5−12(10)=60.5= 65.5

- **True upper class limit:**

    True upper limit=Class midpoint+$\frac{1}{2}$ (Class width =65.5+12(10)=70.5

- **Class midpoint:**

(Upper class limit+Lower class limit)/2=(70+61)/2=65.5

Or:

(True upper limit+True lower limit)/2=(70.5+60.5)/2=65.5