TOPIC: GRAPHICS DISPLAY OF INFOR MATION

Tally Marks and Frequency Distribution:

As the name suggests tally marks shows the number of times an object or data is repeating. The organization of this data in a tabular form is the frequency distribution table. We have used the term 'data'.

Terminologies:

- Data: Data is a collection of numbers. They are gathered and organized to give some information. Data put in their original form as they are collected are raw data.
- Observation: Each of the value in the raw data is an observation.

Types of Data:

Data are collected on the basis of requirement or the needed information. Data are mainly of two types – primary and secondary data.

- Primary Data: The data collected directly from the source is primary data. Suppose when you need to collect data for the favourite game of your classmates. You ask them directly. This is the primary data.
- Secondary Data: The collection of data indirectly or from some external source is the secondary data. These sources can be newspapers, magazines, television, internet etc.

Tally Marks:

Tally marks are the representation of the data in the form of vertical lines. We put one vertical line (|) for each of the four counts. A diagonal line (\) is put for the fifth count. These marks are tally marks.

Tally marks for Number 4 is ||||

Number 5 is represented as   Frequency Distribution

The representation of 6 as Frequency Distribution and so on.

Frequency Distribution:

The representation of the various observations and tally marks in a form of table is the frequency distribution. The frequency is the number of the times an observation occurs. It is the number of repetitions. Consider in a class of 30 students, 5 like badminton. 10 students like cricket, 3 like tennis, 4 like football, 7 like volleyball and 1 likes hockey.

Representation of this data:

Sports	Number of Students = frequency	Tally Marks
Badminton	5	̶H̶H̶
Cricket	10	̶H̶H̶ ̶H̶H̶
Football	4	||||
Hockey	1	|
Tennis	3	|||
Volleyball	7	̶H̶H̶ ||

This table is the frequency distribution table or the frequency table. Each item of this table, badminton, cricket etc. is an observation. The number of the students is the frequency.

Question 1: For the given table, fill the blanks.

Frequency Tally Marks

Frequency   **Tally Marks**

9	—
—	|||
7	—
—	||||
16	—
—		
—	|||
5	—
—	||
11	—

Answer : The complete table is

<u>Answer : The complete table is</u>

Frequency	Tally Marks
9	ⅢⅢ ⅠⅠⅠⅠ
3	ⅠⅠⅠ
7	ⅢⅢ ⅠⅠ
4	ⅠⅠⅠⅠ
16	ⅢⅢ ⅢⅢ Ⅰ
1	Ⅰ
3	ⅠⅠⅠ
5	ⅢⅢ
2	ⅠⅠ
11	ⅢⅢ ⅢⅢ Ⅰ

Question 2: Below is the marks of 35 students in English test (out of 10). Arrange these marks in tabular form using tally marks. 5, 8, 7, 6, 10, 8, 2, 4, 6, 3, 7, 5, 8, 5, 1, 7, 4, 6, 3, 5, 2, 8, 4, 2, 6, 4, 2, 8, 9, 5, 4, 7, 5, 5, 8.

A. How many students scored more than 7 marks?

b. What is the mark scored by the maximum students? What is the number of the students?

c. How many students scored less than and equal to 5?

Answer : The frequency table is

Marks	Number of Students = Frequency	Tally Marks
1	1	Ⅰ
2	4	ⅠⅠⅠⅠ
3	2	ⅠⅠ
4	5	ⅢⅢ
5	7	ⅢⅢ ⅠⅠ
6	4	ⅠⅠⅠⅠ
7	4	ⅠⅠⅠⅠ
8	6	ⅢⅢ Ⅰ
9	1	Ⅰ
10	1	Ⅰ
Total	35	

The number of students with more than 7 marks = 6 + 1 + 1 = 8.

The maximum students scored 5 marks. The number of students is 7.

The number of students with less than and equal to 5 marks = 19.

Bar Graph

Have you noticed the display of some tables during the telecast of a cricket match or any sports match? These tables tell about the players or their comparison with others. Few tables have some block-like structure. Some blocks are higher than the others while some are of the same height. These tables- like representation of the information are the graphs. Here, we will study graphs, their types and the ways of construction. We will also study pictograph, barchart .

Pictograph:

In pictograph, we use pictures or symbols to represent data. A pictograph is an interesting way of making a comparison and analyzing data. A picture can have any numerical value. We can represent half of the value by making half pictures or symbols. Consider a data collection of the number of items sold during a sale in a week of a shop.

Days	Number of Items Sold
Monday	# # # # #
Tuesday	# # #
Wednesday	# =
Thursday	# # =

Friday	# #
Saturday	# # # #
Sunday	# # # # # #

'#' = 50 items '=' = 25 items. Without doing the calculation, we say that the number of items sold was the maximum on Sunday. What was the number of items sold? The number = 6 # = 6 × 50 = 300. The number of the least sold items = (# + =) = 50 + 25 = 75.

Barchart:

A pictograph can be a time-consuming representation of data if the data are large in number. To overcome this problem, bar graphs are used. A barchart is the simplest representation of data. It is a graphical representation of the data in the form of rectangular bars or columns of equal width.
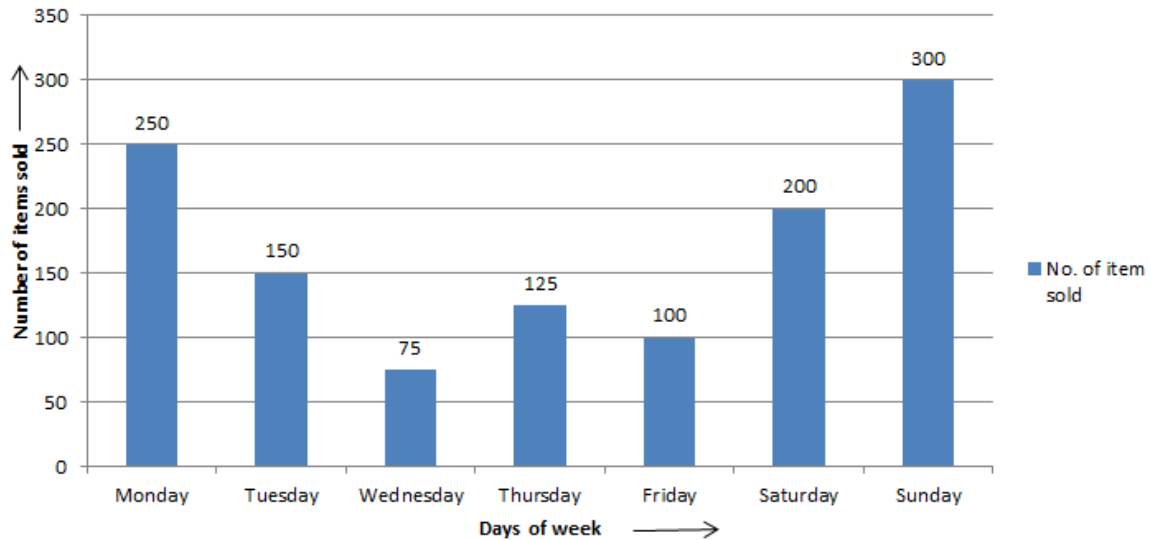
Properties of Bar Graphs:

- Each bar or column in a barchart is of equal width.
- All bars have a common base.
- The height of the bar corresponds to the value of the data.
- The distance between each bar is the same.

Construction of a Bar Graph:

- Draw two perpendicular lines intersecting each other at a point O. The vertical line is the y-axis and the horizontal is the x-axis.
- Choose a suitable scale to determine the height of each bar.
- On the horizontal line, draw the bars at equal distance with corresponding heights.
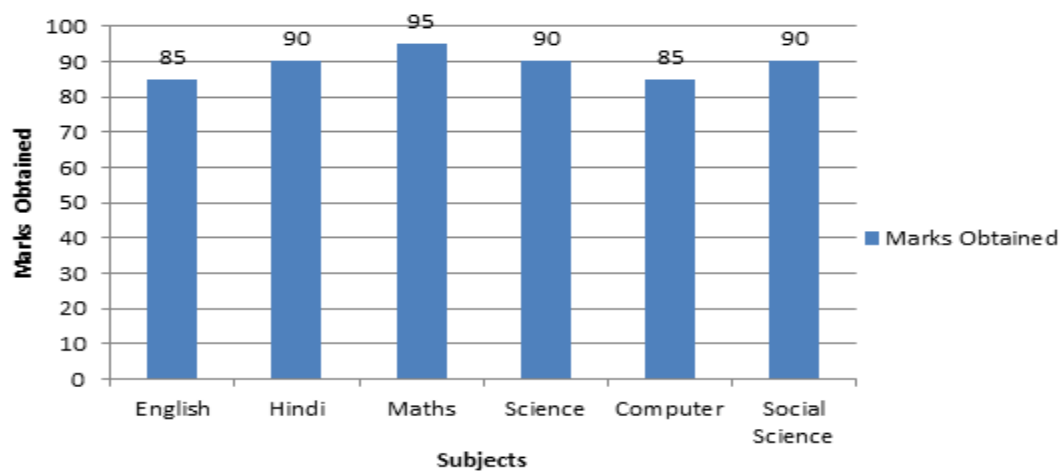
The space between the bars should be equal.

The barchart for the example of the number of items sold during the sale is

Question 1: What is the frequency of 20 marks if 15 students obtained 20 marks in a test?

Answer : The frequency of 20 marks is 15.

Problem: From the given bar-graph answer the following questions:

A. In which subject the student scored the highest?

b. What is the difference between the highest and the lowest marks?

c. In how many subjects, the student got less than 90 marks?

D. What is the total mark scored by the students?

Solution: From the bar graph,

a. The student scored the highest marks in maths.

b. The difference between the highest and the lowest marks $= 95 - 90 = 10$.

Two subjects.

The total marks $= 85 + 90 + 95 + 90 + 85 + 90 = 535$.