Introduction to Data

Pictograph

Bar Graph

Introduction to Data

Data

Data can be defined as a collection of facts or information from which conclusions may be drawn.

Example:

The data shown below are Mark's scores on five Math tests conducted in 10 weeks.
45, 23, 67, 82, 71

Recording Data:

A data collection sheet is a way of recording information.

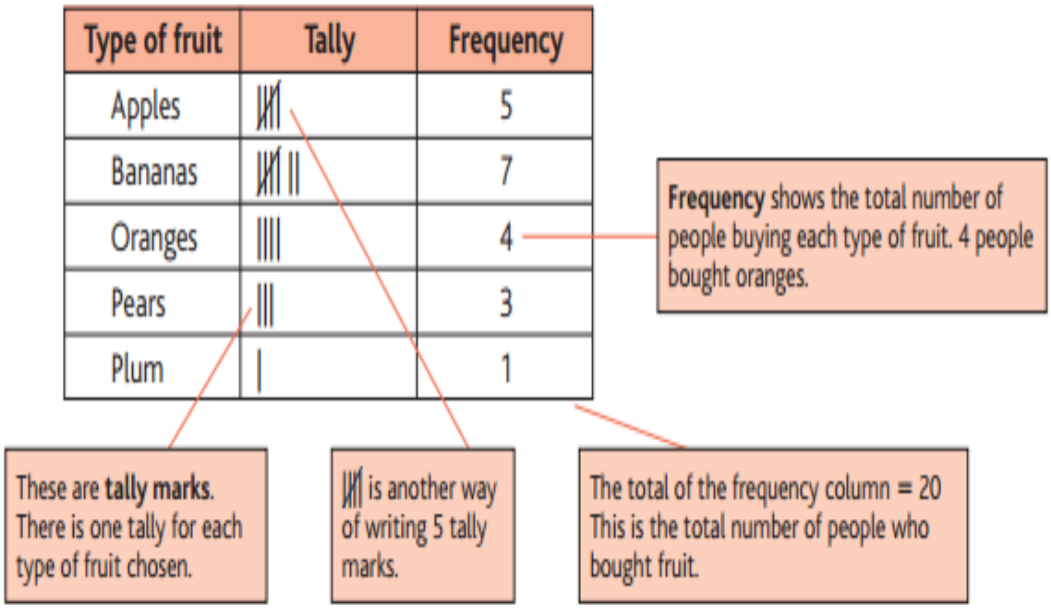
Example:

Twenty people bought the following types of fruit.

Apples	Bananas	Plum	Apples	Bananas
Oranges	Oranges	Apples	Pears	Pears
Bananas	Bananas	Oranges	Bananas	Apples
Bananas	Bananas	Pears	Apples	Oranges

Draw a completed data collection sheet to show this information.

Solution:



Organisation of Data:

Example:

20 students took a math test. Their test marks are shown below

17, 9, 6, 12, 19,

4, 13, 12, 15, 16,

20, 14, 5, 10, 11,

17, 8, 14, 12, 18

Complete the grouped frequency table.

Mark	Tally	Frequency
1–5		
6–10		
11–15		
16–20		

Solution:

Mark	Tally	Frequency
1–5	||	2
6–10	||||	4
11–15	𝍸 |||	8
16–20	𝍸 |	6

Pictograph

Pictograph is a way of representing statistical data using symbolic figures to match the frequencies of different kinds of data.

For Example:

The pictograph shows the number of varieties of apples stored at a supermarket.

Varities of Apples in a food store	
Red Delicious	
Golden Delicious	
Red Rome	
McIntosh	
Jonathan	

 = 10 apples  = 5 apples

Example:

Use the pictograph to find the total number of apples stored in the supermarket.

Varities of Apples in a food store	
Red Delicious	
Golden Delicious	
Red Rome	
McIntosh	
Jonathan	

 = 10 apples  = 5 apples

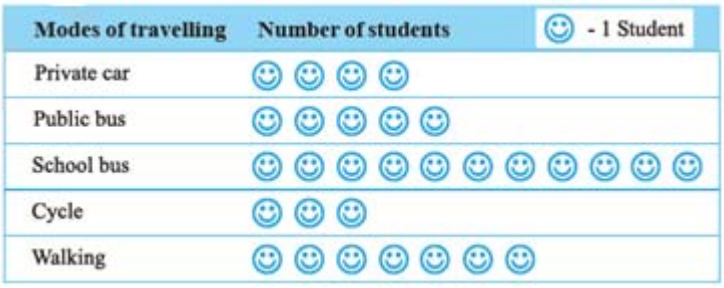
Solution:

Step 1: The pictograph shows 14 full apples and 2 half apples.

Step 2: So, there are 140 + 10 = 150 apples stores in the supermarket.

Example:

A survey was carried out on 30 students of class VI in a school. Data about the different modes of transport used by them to travel to school was displayed as pictograph.



Solution:

From the pictograph we find that:
(a) The number of students coming by private car is 4.
(b) Maximum number of students uses the school bus. This is the most popular way.
(c) Cycle is used by only three students.
(d) The number of students using the other modes can be similarly found.

Drawing of pictograph:

To Draw a Pictograph:

1. Decide what symbol to use and what it will equal. (For example, @ = 20 people)
2. Set up the graph in rows and columns.
3. Draw in the appropriate number of symbols for each category.

Example:

The following table shows how many university students in each year volunteer at a hospital. Create a pictograph to display the data.

Year	1st	2nd	3rd	4th
Number of Students	75	50	100	25

Symbol: @ = 25

Solution:

Year	Number of Students
1st	@ @ @
2nd	@ @
3rd	@ @ @ @
4th	@

Bar Graph

Let us see some other way of representing data visually. Bars of **uniform width** can be drawn horizontally or vertically with **equal spacing** between them and then the length of each bar represents the given number. Such method of representing data is called a **bar diagram** or a **bar graph.**

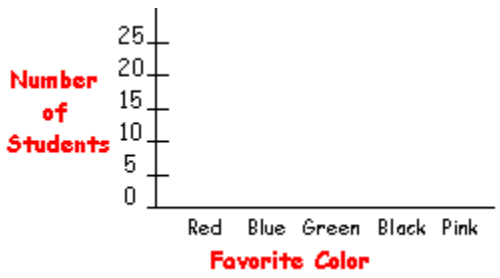
To draw a bar graph

For the following example, we will make a bar graph of the data set to the right, giving information about a group of children's favorite color.

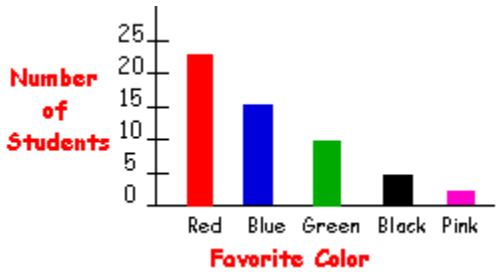
Favorite Color	Number of Students
Red	22
Blue	15
Green	11
Black	5
Pink	2

1. Look at your data to determine how big your bar graph should be and whether horizontal or vertical bars will fit better on your paper. Decide the scale your bar graph will have. This is determined by the biggest and the smallest numbers in your data set. In the data from our example, the biggest number is 22; the smallest is 2. In this case, a scale showing multiples of 5 makes creating and reading the graph easier. Label the scale on your graph.

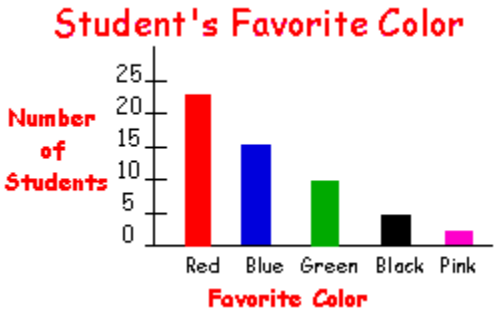
2. Decide how wide the other axis should be to show all of the type of data (5 colors in this case). Label this axis of your graph.



3. Draw the rectangles the right length to represent the data. Pick a good width for the data bars. Color coding can make a graph easier to read.



4. Give your graph a title.



Let us see some more examples.

Example:

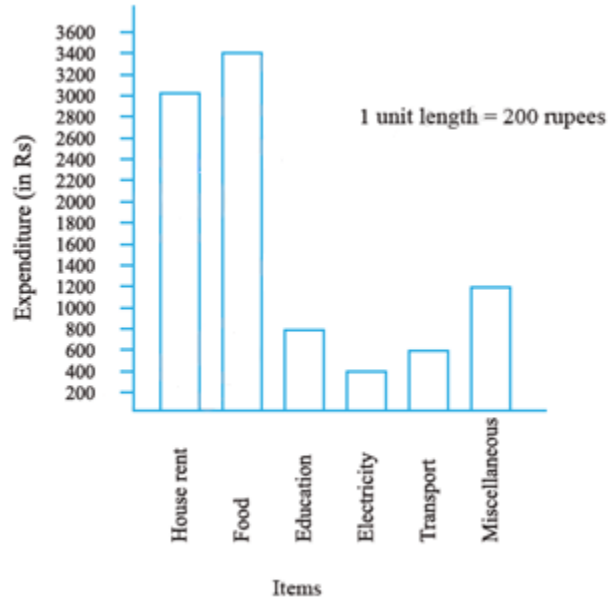
Following table shows the monthly expenditure of imran's family on various items.

Items	Expenditure (in Rs)
House rent	3000
Food	3400
Education	800
Electricity	400
Transport	600
Miscellaneous	1200

To represent this data in the form of a bar diagram, here are the steps.
(a) Draw two perpendicular lines, one vertical and one horizontal.
(b) Along the horizontal line, mark the 'items' and along the vertical line, mark the corresponding expenditure.
(c) Take bars of same width keeping uniform gap between them.
(d) Choose suitable scale along the vertical line. Let 1 unit length = Rs 200 and then mark the corresponding values.

Calculate the heights of the bars for various items as shown below.

House rent : 3000 ÷ 200 = 15 units
Food : 3400 ÷ 200 = 17 units
Education : 800 ÷ 200 = 4 units
Electricity : 400 ÷ 200 = 2 units
Transport : 600 ÷ 200 = 3 units
Miscellaneous : 1200 ÷ 200 = 6 units



Same data can be represented by interchanging positions of items and expenditure as shown below: