Graph and Charts

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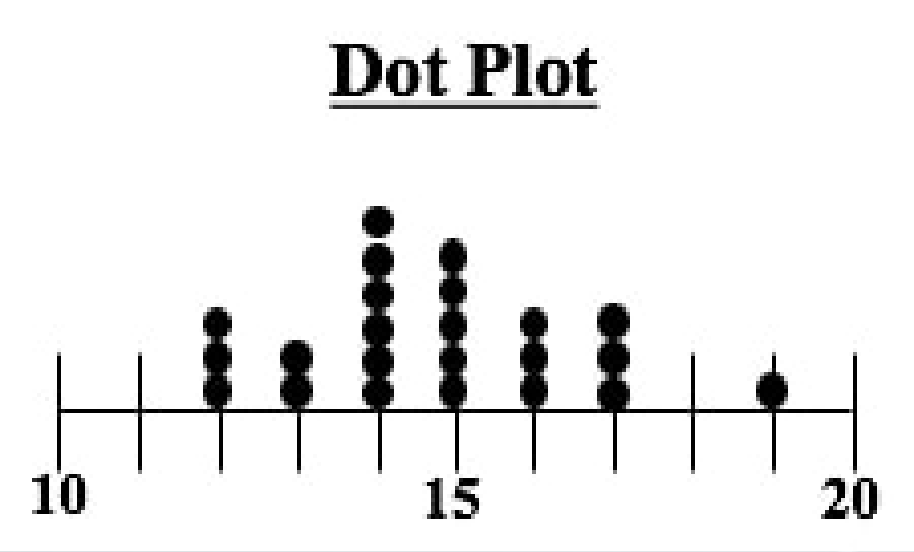
Presentation of data

Dot Diagram: Ungrouped Data
Bar Chart: categorical data
Histogram: frequency distribution
Ogive: Cumulative frequency distribution
Stem-and-leaf Display

Dot Diagram

The dot diagram visually summarizes the information.



Example 1

Physicists first observed neutrinos from a supernova that occurred outside of our solar system when the detector near Kamiokande, Japan, recorded twelve arrivals. The times(seconds) between the neutrinos are

0.107	**0.196**	**0.021**	**0.281**	**0.179**	**0.854**	**0.58**	**0.19**	**7.30**	**1.18**	**2.00**

Draw a dot diagram.

Bar Chart

A bar graph is a graph that displays the frequency or numerical distribution of a categorical variable, showing values for each bar next to each other for easy comparison.

Bar Graph Characteristics

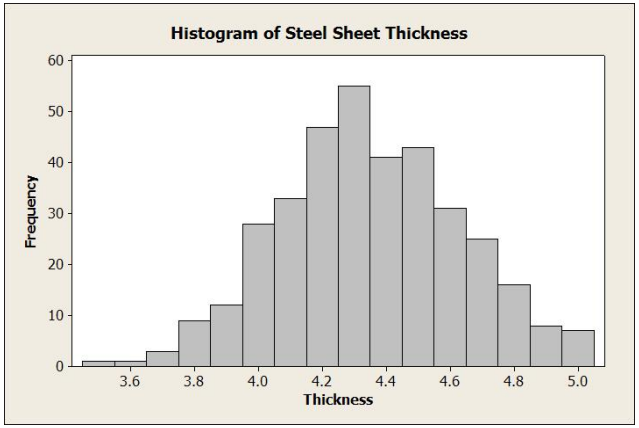
- Data can be quantitative or categorical
- Bars can be vertical or horizontal
- The x-axis represents the category displayed
- The y-axis represents the quantitative values of the variable being displayed
- Bars are of uniform width and uniformly spaced

Example 1

Draw a bar chart to represent the following data, obtained in a study in which 40 drivers were asked to judge the maneuverability of a certain make of car.

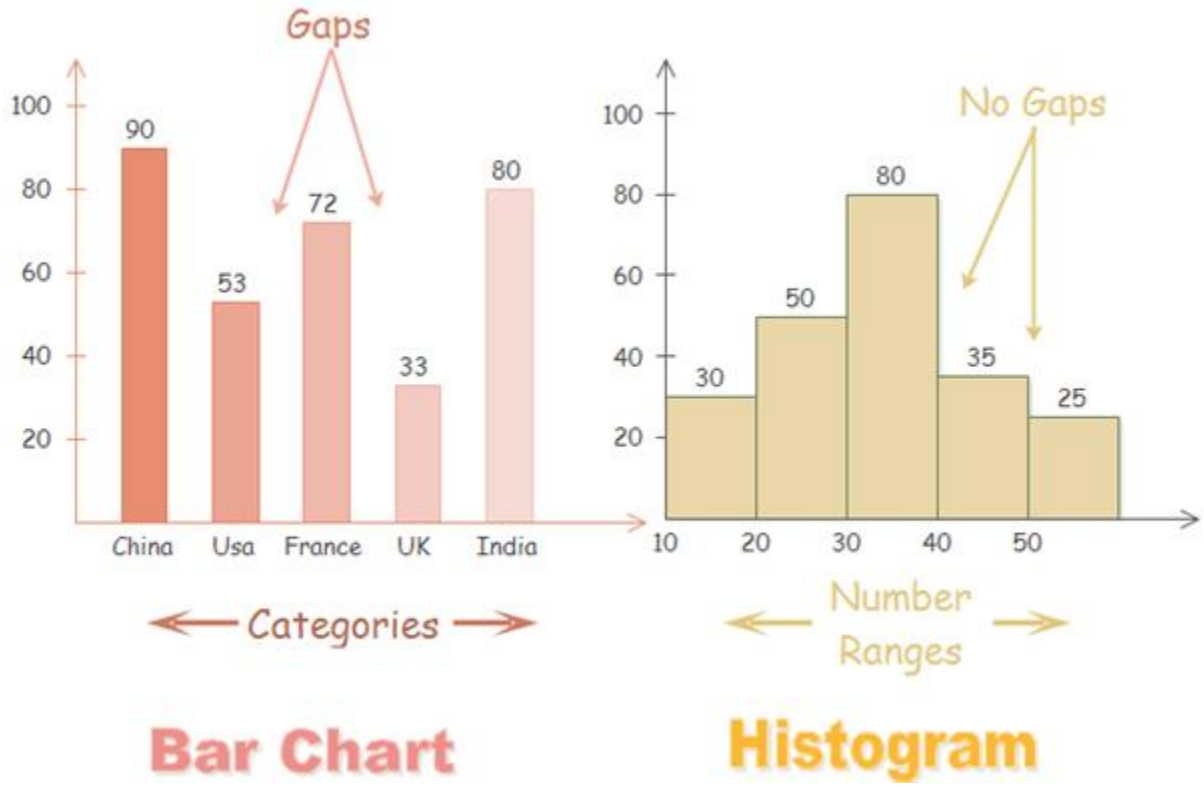
Very good, good, good, fair, excellent, good, good, good, very good, poor, good, good, good, good, very good, good, fair, good, good, very poor, very good, fair good, good, excellent, very good, good, good, good, fair, fair, very good, good, very good, excellent, very good, fair good, good and very good.

Histogram



In a **histogram**, a bar is centered above each score (or class interval) so that the height of the bar corresponds to the frequency and the width extends to the real limits, so that adjacent bars touch.

Difference of Histogram and Bar Chart



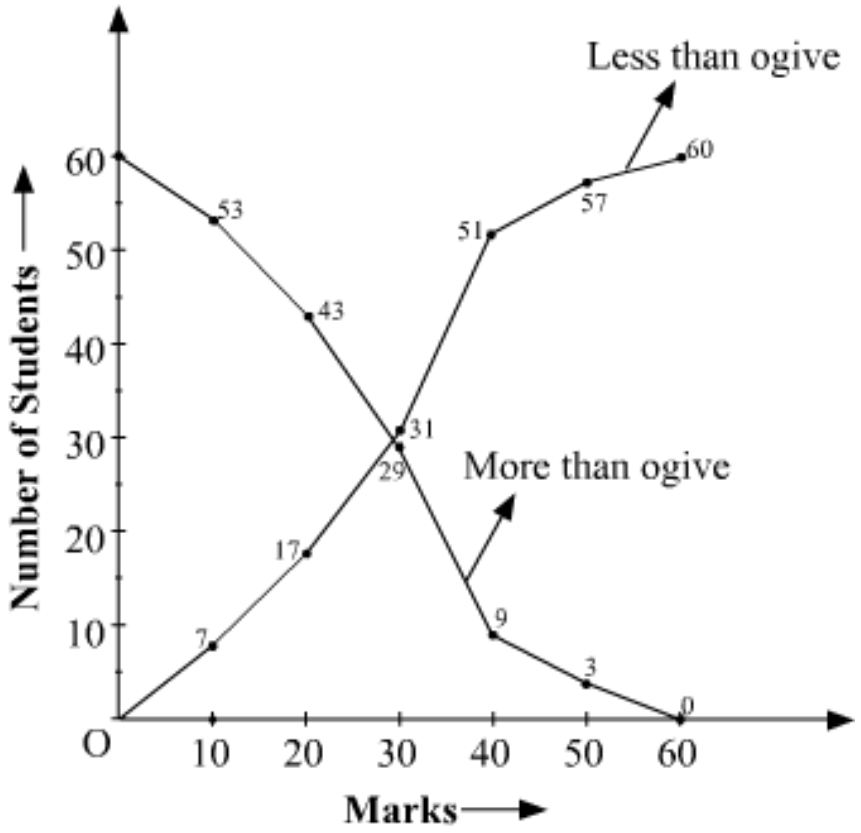
Ogive

Line graph (rather than a bar graph)

Uses class boundaries on x-axis

Uses cumulative frequencies (total as you go) rather than individual class frequencies

Used to visually represent how many values are below a specified upper class boundary


Less than ogive
More than ogive
Number of Students
Marks
O
10
20
30
40
50
60
53
43
31
29
51
57
60
7
17
9
3
0

Ogive

Class Limits	Frequency
5-8.9	3
9-12.9	10
13-16.9	14
17-20.9	25
21-24.9	17
25-28.9	9
29-32.9	2
Total	80

Example 2

The frequency distribution of 80 determinations of the daily emission (in tons) of sulfur oxides from an industrial plant is given below. Construct the histogram and ogive.

Stem-and-leaf Display

- A stem and leaf display is a graphical method of displaying data.
- A stem is the leading digit(s) of each number and used in sorting
- A leaf is the rest of the number
- A vertical line separate the leaf from the stems

Stem	leaf
1	5 7 3 2 0 9
2	7 3 4
3	9 2
4	4 2
5	1