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# Outline

- What is Graphical Presentation?
- Types of Graphical Representation.
  - Circle (Pie) Chart.
  - BAR graph.
  - Dot plot graph.
  - Steam and Leaf display.
  - Frequency Histogram.
  - Relative Frequency Histogram.
  - Ogive (Line) graph.

# Graphical Presentation

**Graphical Representation:** Graphical representation refers to the use of charts and graphs to visually display, analyze, clarify, and interpret numerical data, functions, and other qualitative structures.

**The graph is an organized representation of data.** It helps us to understand the data. Data are the numerical information collected through observation, data that being collected continuously through observation. Then it is organized, summarized, classified, and then represented graphically.

## Types of Graphical Representation

**There are different formats for graphical representation of data charts include:**

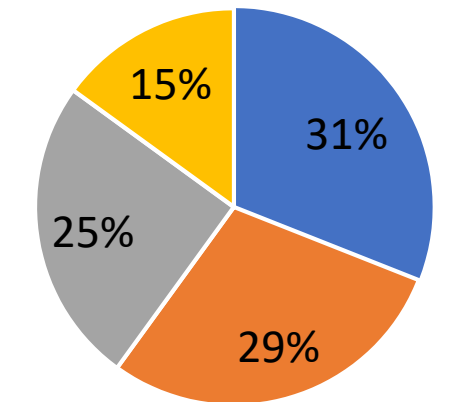
- **Circle (Pie) Chart.**
- **BAR graph.**
- **Dot plot graph.**
- **Steam and Leaf display.**
- **Frequency Histogram.**
- **Relative Frequency Histogram.**
- **Ogive (Line) graph.**

Each type of these different graphical representation will explained separately in details with examples.

## 1. Circle (Pie) graph

Consider as one of the most usual and common graph is the circle graph or also called the **pie graph** due to its shape. The reason why its so popular its give us a visual presentation for the given data especially if the number of data type they are a **relatively few**, for example: The following circle graph represent a number of students in the department of Anesthesia technicians in percentage.

Students	Percentage
First class	31%
Second class	29%
Third class	25%
Fourth class	15%

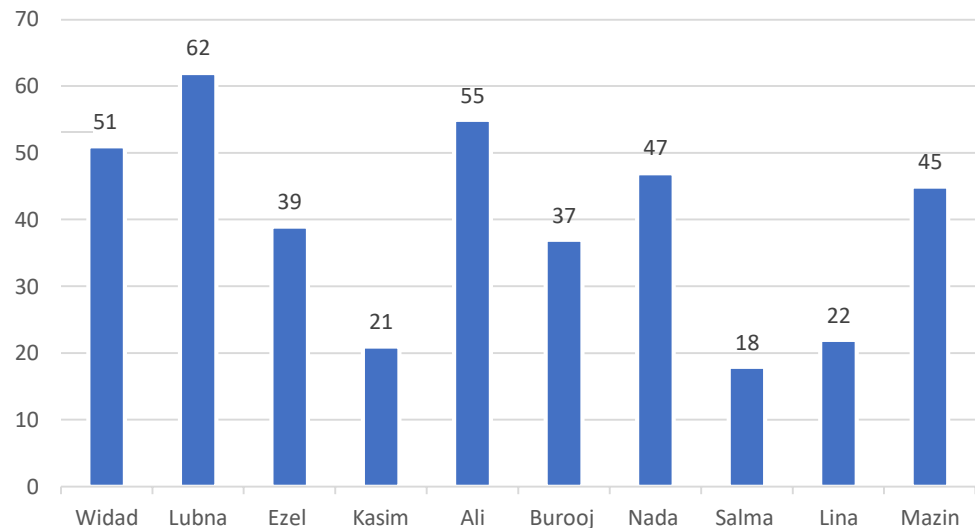


■ 1st class      ■ 2nd class  
■ 3rd class      ■ 4th class

## 2. BAR graph

A **bar chart** is a graph with **rectangular bars**. The graph usually compares different categories. Although the graphs can be plotted vertically (bars standing up) or horizontally (bars laying flat from left to right), the most usual type of bar graph is **vertical**. The horizontal (x) axis represents the categories; The vertical (y) axis represents a value for those categories. In the graph below, the values are percentages. Example for BAR graph, the following data represents names and ages of patients and also using BAR graph chat:

No.	Name	Ages
1	Widad	51
2	Lubna	62
3	Ezel	39
4	Kasim	21
5	Ali	55
6	Burooj	37
7	Nada	47
8	Salma	18
9	Lina	22
10	Mazin	45



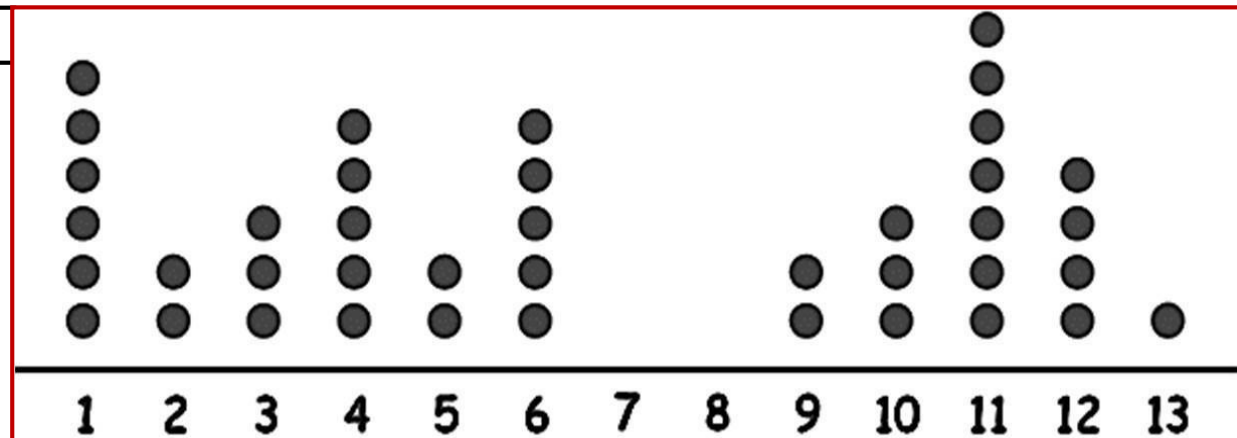
### 3. Dot Plot graph

A **dot chart** or **dot plot** is a statistical chart consisting of data points plotted on a fairly simple scale, typically using filled in circles.

Example: Statical review for different people, how long does it take you to eat breakfast and these results was:

Minutes	1	2	3	4	5	6	7	8	9	10	11	12	13
People	6	2	3	5	2	5	0	0	2	3	7	4	1

Using Dot Plot:

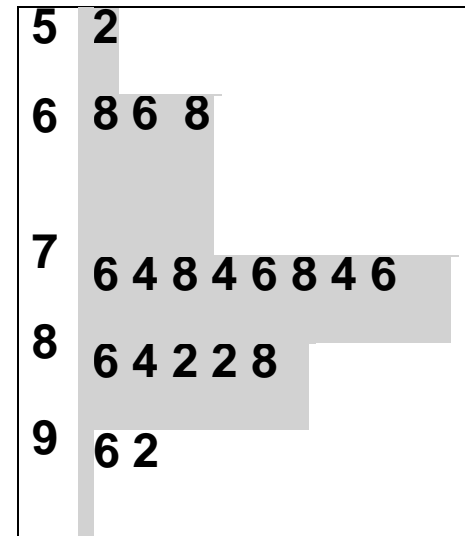
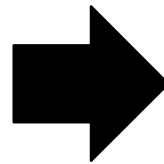


## 4. The Steam and Leaf display

A **stem and leaf** is a technique used to classify either **discrete or continuous** variables. A stem and leaf plot is used to organize data as they are collected. Each number in the data is broken down into a stem and a leaf, The stem of the number includes all but the last digit. For example: we have 19 students examined and the score was scheduled in the following table:

76	86	74	84	82
68	96	78	66	74
76	92	78	82	74
76	52	88	68	

Using  
Steam  
and  
Leaf

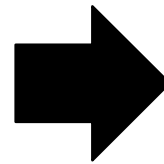


## 5. Frequency Histogram

One of the **more commonly used pictorials in statistics** is the **frequency histogram**, which in some ways is similar to a bar chart and tells how **many items** are in **each numerical category**. Typically, **no fewer than 5 and no more than 20 class intervals work best for a frequency histogram**. For example: 25 letter grades scheduled in the following table try using frequency histogram distribution:

B	C	C	B	D
A	B	C	B	C
D	F	C	C	D
C	B	A	F	A
F	B	C	B	A

Using  
frequency  
histogram  
distribution



Data Type	frequency
A	4
B	7
C	8
D	3
F	3



## 6. Relative Frequency Histogram

A relative frequency histogram uses the same information as a frequency histogram **but compares each class interval to the total number of items**. For example, from above table:

B	C	C	B	D
A	B	C	B	C
D	F	c	C	D
C	B	A	F	A
F	B	C	B	A

Using  
frequency  
and  
relative  
frequency  
histogram  
distribution



Data Type	frequency	Relative frequency
A	4	16
B	7	28
C	8	32
D	3	12
F	3	12
Total	25	100

## 7. Ogive (Line) graph

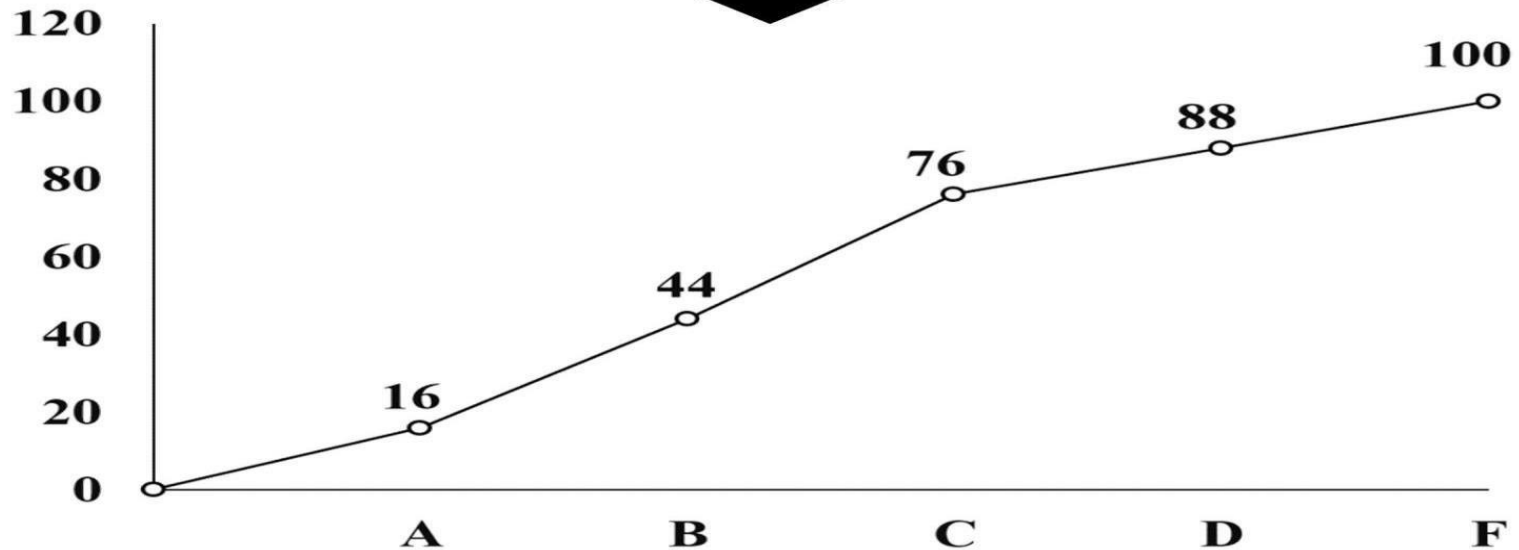
**An ogive (oh-jive)**, sometimes called a **cumulative frequency polygon**, is a type of frequency polygon that shows cumulative frequencies. An ogive graph plots cumulative frequency on the **y-axis** and class boundaries along the **x-axis**.

It's very similar to a histogram, only instead of rectangles, an ogive has a single point marking where the top right of the rectangle would be. It is usually easier to create this kind of graph from a frequency table. For example we used same data from above table and scheduled in the following table by using Ogive:

## 7. Ogive (Line) graph

Data Type	frequency	Relative frequency	Cumulative
A	4	16	16
B	7	28	44
C	8	32	76
D	3	12	88
F	3	12	100
Total	25	100	-

Using Ogive graph



## Advantages and Disadvantages of graphical representation of data :

- It improves the way of analyzing and learning as the graphical representation makes the data easy to understand.
- It can be used in almost all fields from mathematics to physics to psychology and so on.
- It is easy to understand for its visual impacts.
- It shows the whole and huge data in an instance.

The main disadvantage of graphical representation of data is that it takes a lot of effort as well as resources to find the most appropriate data and then represents it graphically.

### Homework:

1- Give a visual presentation by pie graph for number of data type that represents the kind of specialty that medical students would like to graduate at.

<b>Students No. in %</b>	<b>Graduation Type</b>
<b>5</b>	<b>Cardiology</b>
<b>4</b>	<b>Nephrology</b>
<b>9</b>	<b>Rheumatology</b>
<b>15</b>	<b>Gynecology and obstetric</b>
<b>17</b>	<b>Dermatology</b>
<b>3</b>	<b>Pathology</b>
<b>13</b>	<b>Radiology</b>
<b>1</b>	<b>Neurology</b>
<b>12</b>	<b>Public health</b>
<b>3</b>	<b>Histology</b>
<b>2</b>	<b>Anatomy</b>

**Homework:**

2- The data represent a statical review for different male and female wights in kilogram were scheduled as in the table. Use steam and leaf graph to display the data.

<b>No.</b>	<b>Male</b>	<b>Female</b>
<b>1</b>	<b>141</b>	<b>96</b>
<b>2</b>	<b>178</b>	<b>102</b>
<b>3</b>	<b>147</b>	<b>106</b>
<b>4</b>	<b>153</b>	<b>108</b>
<b>5</b>	<b>155</b>	<b>118</b>
<b>6</b>	<b>129</b>	<b>118</b>
<b>7</b>	<b>234</b>	<b>128</b>
<b>8</b>	<b>186</b>	<b>124</b>
<b>9</b>	<b>198</b>	<b>134</b>
<b>10</b>	<b>204</b>	<b>146</b>

**Thank you**