INTRODUCTION TO GRAPHS

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Introduction to Graphs

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Graphs are visual representation of data collected. It is easier to understand and it is true when there is a comparison to be shown.

Graphs are in some different forms like bar graph, pie graph, histogram, line graph etc.

- A bar graph is used to show comparison among categories & it may consists two or more parallel (vertical or horizontal) bars.
- (2) A pie chart is used to compare part of a whole, the circle represents the whole.
- (3) A histogram is a bar graph shows data in intervals and it has adjacent bars over the intervals.

There is no gaps between bars since there is no interval between the intervals.

(4) A line graph displays data that changes continuously over period of time. It consist some points which joined by consecutive lines.

Note : If points are joined by broken line then these type of graphs are called linear graph.





The horizontal line is usually called x-axis & vertical line is called y-axis. The intersection point of both perpendicular axis is called origin (0).

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Some times a jagged line $(-\sqrt{-})$ or kink has been used along horizontal line to indicate that we are not showing some numbers between 0 to first given number.



- Coordinates: In a plane we require positions of a point in horizontal & vertical direction (or in x & y direction respectively). These positions are called coordinates or Cartesian coordinates of a point.
 - **Eg**: If a point covers 3 unit distance in +x direction and 4 units in +y direction then coordinates of point are (3, 4).

Here 3 is x coordinate or abscissa

and 4 is y coordinate or ordinate.



Note :

These two axes (lines) are perpendicular to each other and divide a paper (plane) in four equal parts, each part is called quadrant.



Coordinate of origin O are (0, 0).

Coordinate can be +ve or -ve.

Sign system in quadrant as follows.



on x-axis, ordinate (y part) of any point is always 0.

Eg. (-5, 0) (2, 0) (7, 0) etc. are on x axis

On y axis, abscissa (x part) of any point is always 0.

Eg. (0, 7) (0, 3/2) (0, -5) etc are on y axis.

Ex.1 Find the location of the following points.

(-3, 4), (2, 7), (0, 3), (-5, -2), (3, -8), (-7, -11), (9, 0), (0, 0)

- Sol. II quadrand, Iq, on y axis, IIIq, IVq, IIIq, on x axis, origin.
- Variable : Quantity which change its value according to given condition or a number not having a fix value, called variable like x, y, z, t...

Independent and Dependent variable :

If one quantity affects the other quantity then first one is called independent variable and other quantity is called dependent variable.

- (1) Increase of time affects amount of interest. Here time is independent and interest is dependent variable.
- (2) As speed increases the distance cover in less time. Speed is independent and time is dependent variable.
- (3) As sides increase of any polygon then perimeter is also increase. Length of sides are independent & perimeter is dependent variable.
- Distance from coordinate axis : If a point p(x, y) locate on a plane then distance of this point from x-axis is equal to y coordinate and from y-axis the distance is equal to x coordinate.

Note : Distance is always positive



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IMPORTANT POINTS TO BE REMEMBERED

- **1.** The horizontal line is called x axis.
- **2.** The veritical line is called y axis.
- **3.** The intersection point of both axes is called origin whose coordinates are (0, 0).
- **4.** The ordinate of point which lies on x-axis is always 0.
- 5. The abscissa of point which lies on y-axis is always 0.
- **6.** For drawing linear graph we have to take suitable scale for both axes.
- 7. The sum of all angles at centre of circle is equal to 360°.
- 8. For making pie chart, we find angles for each item by formula $\frac{\text{ratio of given item}}{360^{\circ}} \times \text{total.}$