

SUBJECT:-MATHEMATICS

STD-VI

BASIC GEOMETRICAL CONCEPT



PDF CHAPTER LINK

<u>https://drive.google.com/open?id=12EomNpMH</u> <u>Rw2bf7j_EGnaOrXJh41gx13e</u>



LEARNING OBJECTIVES

Students will be able to:

Recall the concept of point ,line ,ray and line segment.

Define plane.

- *Differentiate between plane and curved surface.
- *Understand the properties of points .
- Apply the concept of line, line segment and ray in real life situation.
- Create different geometrical shapes.
- *List the examples of intersecting lines and parallel lines.

INTRODUCTION:

Geometry is the branch of mathematics concerned with the properties and relationships of lines, angles, curves and shapes.

Geometry comes from an ancient Greek Word GEO means EARTH and METRON means MEASUREMENT.

A Greek Mathematician named Euclid is often referred to as the father of geometry.

Geometry is extremely useful for architects, engineers, carpenters, painters ,electricians, teachers etc.

The principles of geometry are very useful in the construction of roads , buildings and machineries.



POINT

•A point is usually represented by a small dot.

•By a sharp tip of the pencil, mark a dot on the paper. Sharper the tip, thinner will be the dot.







LINES

- A line is a straight path which extends endlessly in both the directions. So it has no end points.
- Line can also be named by using a single small letter of the alphabets.
- The line given below is called line AB or line BA.
- A short way to write the name of this lines is \overrightarrow{AB} or \overrightarrow{BA} .







Horizontal

- Lines, segments, and rays may be drawn horizontally.
- Horizontal means level with the horizon.
- The horizon is the line in the distance where the land and the sky meet.







Vertical

- Lines, segments, and rays may be drawn vertically.
- Vertical means straight up and down.









RAY:-

*A ray has one end point and extends without limit in one direction from the end point.
*The point where the ray starts is called the end point.
*A ray has an arrow head on one side and a point on the other side called the end point.
*A line can contain unlimited number of rays.









ACTIVITY ON POINT, LINE , LINE SEGMENT AND RAY

Materials required:-

- Chart paper
- Ear bud/ match stick/ plastic straw
- Coloured paper
- Fevicol
- By using above materials, students will make line, line segment, ray and point.



PLANE

- □ A plane is a flat surface which extends endlessly in all direction.
- □ It is a collection of an infinite number of points.
- □ We can use arrows to show that a plane extends in all the directions forever.
- **Diagrammatically, a plane can be represented as:**









SURFACE OF THE BLACK BOARD



WALL







PROPERTY 1: We can draw many lines passing through a point.







PROPERTY 2: One and only one line can be drawn passing through two given point.





Definitions

Collinear

· points that lie on the same line

B, C, and D are collinear



G

Noncollinear

points that <u>do not</u> lie on the same line

E, F, and G are <u>noncollinear</u>

One line could not pass through all 3 points.

Work is Worship

• E

F



WORKSHEET

1. How many lines can be drawn through three collinear points?

2.From the following figure, name

- i. four line segments
- ii. Three rays
- iii. Any three points
- 3. How many lines can be drawn through three non collinear points?

4. Give three examples of point from your environment.

Solution:-

2. i. \overrightarrow{AC} , \overrightarrow{CD} , \overrightarrow{CQ} , \overrightarrow{DQ} ii. \overrightarrow{QS} , \overrightarrow{QC} , \overrightarrow{EA} ,

iii. Point C, D, Q

3. Three examples are

 $\begin{array}{l} [0.5 + 0.5 + 0.5 + 0.5] \\ [0.5 + 0.5 + 0.5] \\ [0.5 + 0.5 + 0.5] \end{array}$









Intersecting Lines-lines that cross each other.











CONCURRENT LINE:

Three or more lines which pass through the same point are called concurrent lines. In the following figure Line PQ , line AB , line RS and line CD are passing through the point O. So these four lines are called concurrent lines.

Point 'O' is called point of concurrence.





LETS SOLVE.....

1.Draw a rough figure and label suitably in each of the following cases.i. Line segment XY and PQ intersect at point Mii. Line I is parallel to line p.

iii. Line EF, CD and AB concurrent at point O.

- 2. In the given figure, name
 - i .Any two parallel lines.
 - ii. Any two intersecting lines.
 - iii. One set of collinear points.

Solution:-

- i. Line (n II p), line(p II q)
- ii. Line (l, n), line(m, n)
- iii. Point (E, F, G)

[0.5+0.5] [0.5+0.5] [1]





ART INTEGRATION

•Teacher framed video on intersecting lines, parallel lines and concurrent lines.

https://youtu.be/dz7ZWZ6vWwU



Understand the term point, line, line segment and ray.
 Ability to solve the problems related to basic geometrical concepts.
 Communicate the ideas of geometry with others.
 Apply the knowledge of parallel lines, intersecting lines and concurrent lines in real life situation.
 Design mind map on basic concepts of geometry.



SUMMARY

- A point has an exact location. It has no length, no breadth and no height.
- A line has no end points.
- A ray has one end point. A line segment has two end points.
- □ A plane extends endlessly in all direction.
- □ Three or more points which lie on the same line are called collinear points and points which do not lie on the same line are called non collinear points.
- □ When two lines cut each other at a point they are called intersecting lines and the point is called point of intersection.
- □ Three or more lines which pass through the same point are called concurrent lines and the point is called point of concurrence.
- **Only one line can be drawn passing through two given points.** Many lines can be drawn passing through one given point.
- Two lines in a plane either intersect each other at a point or are parallel to each other.



