

Girls' High School and College, Prayagraj

Worksheet -No.7

Session-(2020-21)

Class: 3 (A-F)

Subject: Mathematics

Chapter 6- Geometry

Topic- Plane Shapes


Instructions: Parents are expected to ensure that the child understands the topic and is able to solve the exercise.


Learning Objective: We will learn the concepts of straight line, curved line and plane shapes (also called two dimensional shapes) like triangle, circle, square and rectangle. Knowledge of geometry provides many fundamental skills and helps us to improve problem solving skill, logical skill and so on.

Basic Shapes (Plane figures)

Straight Line : A straight line has no thickness and extends in both the directions without any end. Lines can be straight or curved. Straight lines can be horizontal or vertical or slanting.

Horizontal line - 

Vertical Line - 

Slanting line - 

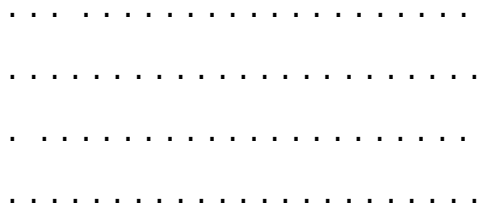
Let us draw a straight line on a sheet of paper:

- 1) We need a scale (ruler), a sheet of paper and a pencil.
- 2) Put the scale straight on the sheet of paper and hold it firmly with fingers of one hand.
- 3) Now run the pencil along the scale for some length. When we remove the pencil and the scale we get a part of the line .Now put arrows on both the ends. A straight line is represented as



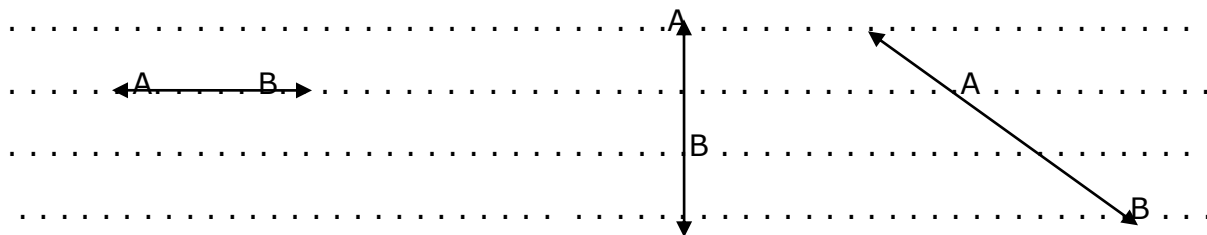
Arrows at both the ends show that it can be extended to any length on both sides. This also means it has no start and no end.

Dot Grid: An array of dots arranged in rows and columns is called a dot grid. It looks like this



Straight line on a dot grid:

- 1) Mark any two points on a dot grid.
- 2) Using a scale and pencil make a line through them.
- 3) This line may be horizontal or vertical or slanting.
- 4) It has no starting and no ending point.

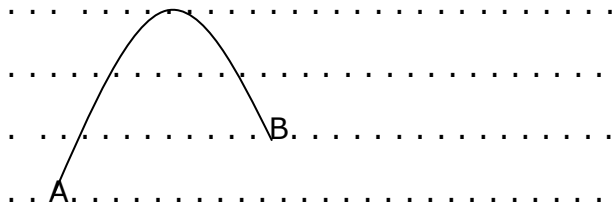


Curved Line: A line which is bent or continuously bending is called a curved line. A curved line can be drawn by moving the tip of a pencil over a paper freely.



Curved line on a dot grid:

- 1) Mark any two points on the dot grid.
- 2) Let us call them A and B.
- 3) Join them using free hand (no scale) .We get a curved line as shown below.



Plane Shapes

Shapes having only length and breadth but no thickness are called plane shapes. Plane shapes are also known as two dimensional shapes.

- 1) A plane shape may or may not have corners (vertices).
- 2) A plane shape has at least one side.
- 3) Sides may be straight or curved.
- 4) A plane shape may or may not have diagonals.

Example: Square, Rectangle, Circle, Triangle are some plane shapes.

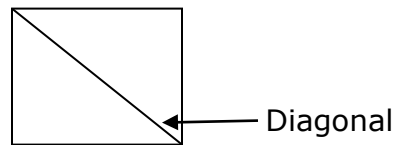
Polygon: A polygon is any 2 dimensional shape formed with straight lines. The minimum number of straight lines required to make a polygon is 3.

Example: Triangle, rectangle (4 sides) , hexagon(6 sides)

Diagonal: A line segment joining two vertices of a polygon, which are not on the same edge.

(Plural of vertex is called vertices.)

Example:



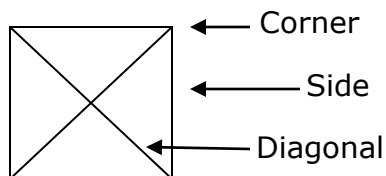
Let us observe plane shapes one by one:

1) Square – It has 4 sides (4 straight, 0 curved).

It has 4 vertices (corners).

It has 2 diagonals.

All four sides are equal in length.

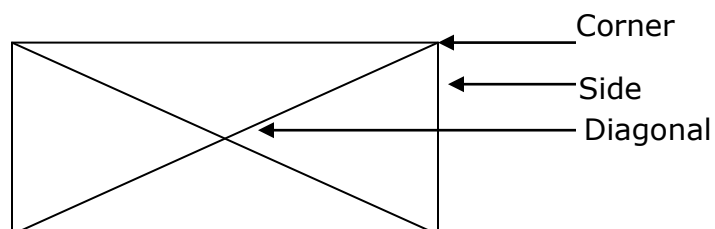


2) Rectangle – It has 4 sides (4 straight, 0 curved).

It has 4 vertices (corners).

It has 2 diagonals.

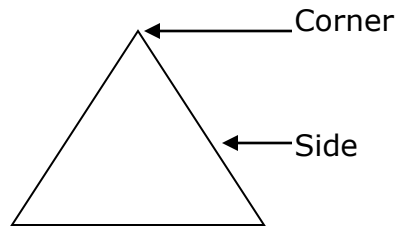
Opposite sides are equal.



3) Triangle - It has 3 sides (3 straight, 0 curved).

It has 3 vertices (corners).

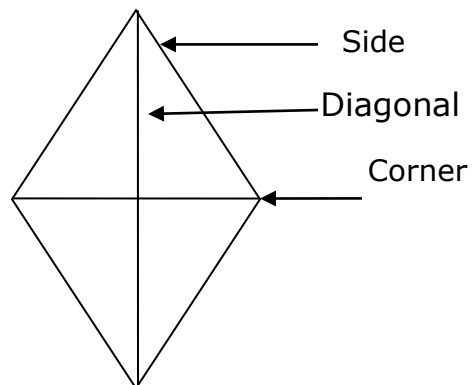
No diagonals.



4) Kite - It has 4 sides (4 straight, 0 curved).

It has 4 vertices (corners).

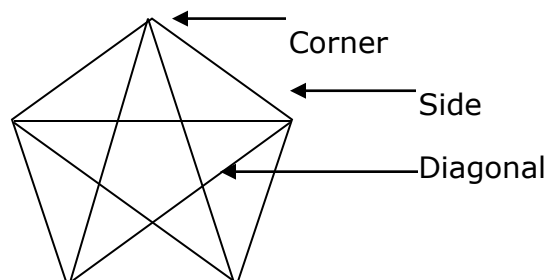
It has 2 diagonals.



5) Pentagon - It has 5 sides (5 straight, 0 curved).

It has 5 vertices (corners).

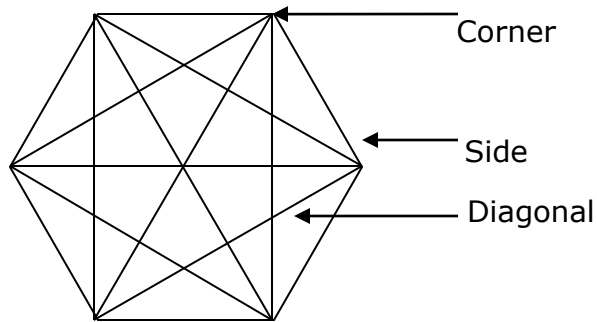
It has 5 diagonals.



6) Hexagon - It has 6 sides (6 straight, 0 curved).

It has 6 vertices (corners).

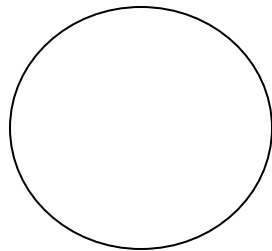
It has 9 diagonals.



7) Circle - It has 1 side (1 curved).

It has no vertex (corner).

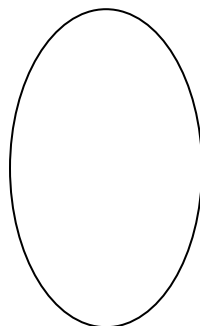
It has no diagonals.



8) Oval - It has 1 side (1 curved).

It has no vertex (corner).

It has no diagonals.



Shapes on a dot grid: You can also make plane shapes on a dot grid by joining dots.

Example1: Triangle

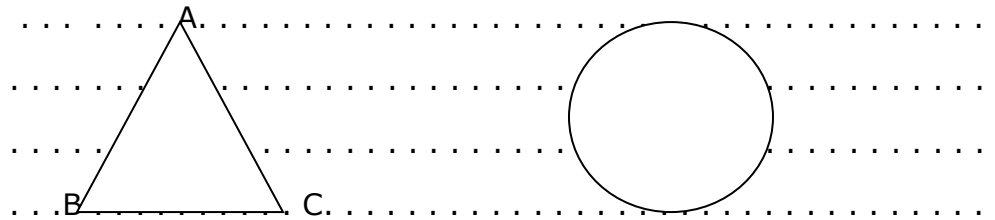
Let us draw a triangle on a dot grid.

- a) Take any three points which are not on the same line. Let us call them A, B and C.
- b) Join A to B, B to C and C to A.
- c) We get a triangle. We call it triangle ABC.

Example2: Circle

Let us draw a circle on a dot grid.

- a) Put a coin on the dot grid.
- b) Adjust so that its edge passes through many points.
- c) Run the pencil along the edge.
- d) Remove the pencil. We get a circle



Exercise

Note: Parents kindly ensure that the child should learn to draw all the shapes properly in the notebook.

1) Fill in the blanks:

- a) A _____ and an oval have same number of sides.
- b) A pentagon has _____ side more than a rectangle.
- c) A _____ has three diagonals more than a square.

- d) A kite has seven diagonals less than a _____.
- e) A hexagon has _____ sides and _____ corners.
- f) A rectangle has _____ diagonals.
- g) Square, _____ and _____ have same number of corners.
- h) A triangle has _____ curved sides.
- i) An array of dots arranged in rows and columns is called a _____.
- j) A line which is bent or continuously bending is called a _____ line.
- k) A straight line is of _____ types.
- l) Plural of vertex is _____.
- m) Plane shapes are also called _____ dimensional shapes.
- n) All the four sides of a _____ are equal.

2) Draw and define:

- a) Triangle
- b) Pentagon
- c) Circle

3) Draw a square and a rectangle .What is common between them? How is a square different from a rectangle?

_____ End _____