



BAL BHARATI PUBLIC SCHOOL, PITAMPURA, DELHI – 110034

SUBJECT:- MATHEMATICS CLASS:- VIII

CHAPTER:-3

Understanding Quadrilaterals (Part 1)

GUIDELINES

Dear students kindly refer to the following notes/video links for the Chapter- "UNDERSTANDING QUADRILATERALS " and then do the given questions in your Mathematics notebook.

NOTE- Students can download the NCERT textbook using the

following link:

<http://ncert.nic.in/textbook/textbook.htm?hemh1=0-16>

INTRODUCTION

Plane Surface

A flat surface like paper is a plane surface.

Plane Curve

When we get a curve by joining the number of points without lifting the pencil is a plane curve.

It could be an open or closed curve.

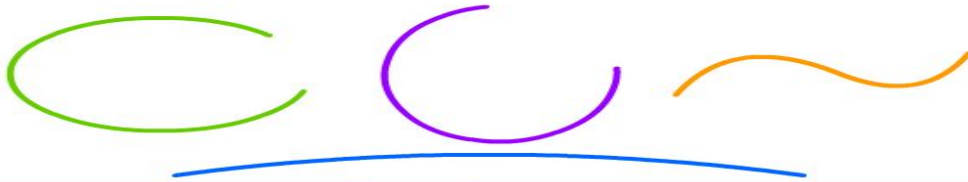
Types of Curves

OPEN CURVE AND CLOSED CURVE

open and closed curves

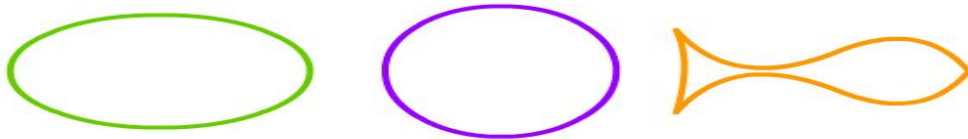
An open curve has two endpoints.
It does not enclose an area.

open curves



closed curves

A closed curve has no endpoints and
completely encloses an area.



Closed curves include circles, ellipses
and ovoids.

SIMPLE AND NOT SIMPLE CURVE

A Simple curve is a curve that does not cross itself.

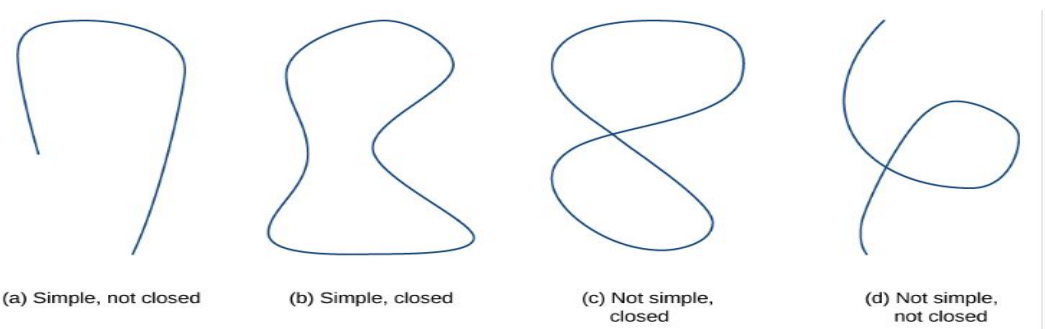
Simple curve



Non-simple curve

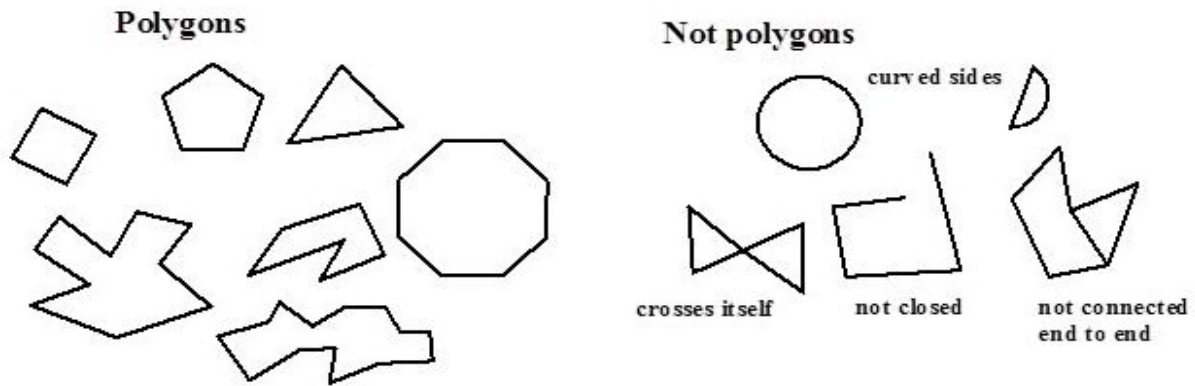


Types of curves that are simple or not simple and closed or not closed.



Polygon

A simple closed figure made up of line segments only is called a polygon.



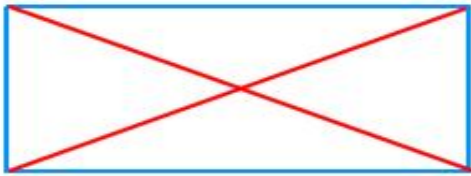
Regular Polygon and Irregular Polygon

A regular polygon is the one with all sides equal and all angles equal. Polygons which are not regular are called irregular polygon.

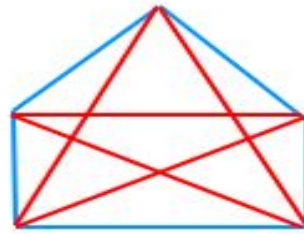
	Regular polygon	Irregular Polygon
Triangle		
Quadrilateral		
Pentagon		
Hexagon		
Octagon		

Diagonal

A line segment that joins two non adjacent vertices is called a diagonal.



Diagonals of a
Rectangle



Diagonals of a pentagon

SUBTOPICS

1. Polygon
2. Diagonal
3. Regular and irregular polygon
4. Convex and concave polygon
5. Regular and Irregular polygons

KEY POINTS AND IMPORTANT LINKS FOR REFERENCE

1. TYPES OF CURVES

<https://www.examfear.com/free-video-lesson/Class-8/Maths/Understanding-Quadrilaterals/part-1.htm>

2. POLYGON AND TYPES OF POLYGON

<https://www.examfear.com/free-video-lesson/Class-8/Maths/Understanding-Quadrilaterals/part-1.htm>

3. CONVEX AND CONCAVE POLYGON

<https://www.youtube.com/watch?v=zjtM39uVw2M>

4. TYPES OF POLYGON AND DIAGONAL

<https://www.youtube.com/watch?v=zjtM39uVw2M>

POINTS TO REMEMBER:

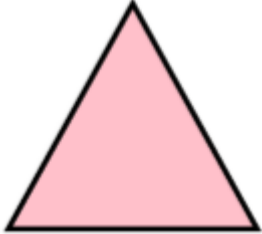



1. Polygons


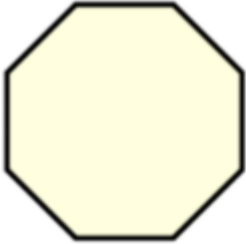
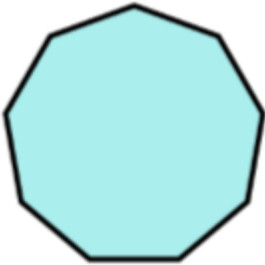
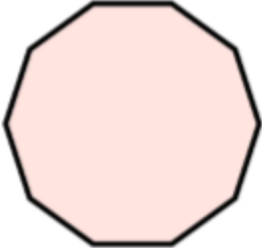
The simple closed curves which are made up of line segments only are called polygons.



2. Classification of Polygons

Polygons can be classified by the **number of sides** or **vertices** they have.

Number of sides	Name of Polygon	Figure
3	Triangle	
4	Quadrilateral	
5	Pentagon	
6	Hexagon	

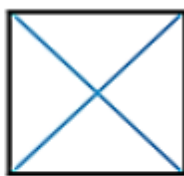
7	Heptagon	
8	Octagon	
9	Nonagon	
10	Decagon	

3.Diagonals

Any line segment which connects the two non-consecutive vertices of a polygon is called **diagonal**.



Triangle
3 sides
0 diagonals



Quadrilateral
4 sides
2 diagonals



Pentagon
5 sides
5 diagonals



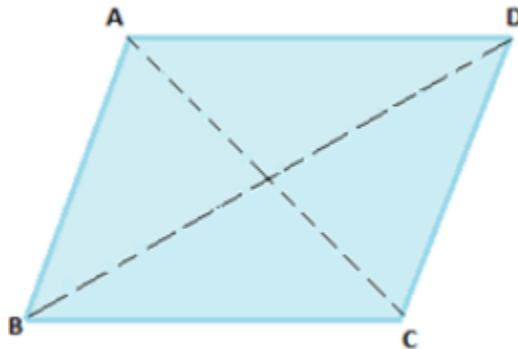
Hexagon
6 sides
9 diagonals

The number of diagonals in a polygon = $\frac{n(n-3)}{2}$

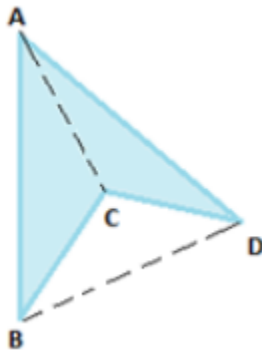
Where **n** is the number of sides

4. Convex and Concave Polygons

The polygons which have all the diagonals inside the figure are known as **convex polygons**.



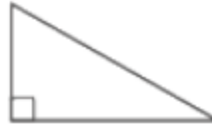
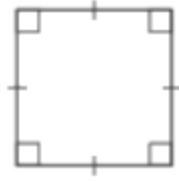
The polygons which have some of its diagonals outside the figure also are known as **concave polygons**.



5. Regular and Irregular Polygons

Polygons which are equiangular and equilateral are called **regular polygons**, i.e. a polygon is regular if-

- All its sides are equal
- All its angles are equal



Regular polygons

Polygons that are not regular

Hence a square is a regular polygon but a rectangle is not, as its angles are equal but sides are not equal.

ASSIGNMENT

- 1 From NCERT textbook the following questions are to be done in Mathematics notebook:
Exercise 3.1
Q1, Q2 and Q5
2. Online Practice assignment on understanding quadrilateral.

1. <https://www.khanacademy.org/math/in-math-by-grade/in-in-class-8th-math-cbse/xa9e4cdc50bd97244:in-in-8th-quadrilaterals/xa9e4cdc50bd97244:in-in-8th-quadrilaterals/xa9e4cdc50bd97244:curves-and-polygons/e/concave-vs-convex-regular-vs-irregular-polygons-8th?modal=1>

2. <https://www.khanacademy.org/math/in-math-by-grade/in-in-class-8th-math-cbse/xa9e4cdc50bd97244:in-in-8th-quadrilaterals/xa9e4cdc50bd97244:in-in-8th-quadrilaterals/xa9e4cdc50bd97244:curves-and-polygons/e/recognizing-shapes?modal=1>

3. Practice questions to be done in practice notebook.

Q1. Which of the following quadrilaterals is a regular quadrilateral?

- (i) rectangle
- (ii) square
- (iii) rhombus
- (iv) kite.

Q2. Diagonals of which of the following quadrilaterals do not bisect it into two congruent triangles?


- (i) rhombus
- (ii) trapezium
- (iii) square
- (iv) rectangle.

Q3. The number of diagonals in a polygon of n sides is

A) $\frac{n(n-1)}{2}$ B) $\frac{n(n-2)}{2}$ C) $\frac{n(n-3)}{2}$ D) $n(n-3)$

Q4. How many diagonals does a convex quadrilateral have ?

Q5. A rectangle whose adjacent sides are equal becomes _____

Q6.  is a concave polygon. (true/false)

