CHAPTER -3

UNDERSTANDING QUADRILATERALS

Please Note : Dear students after you all finish with **chapter 1** start with **chapter 3** .In this chapter we will learn about quadrilaterals in detail.

: See that after understanding, copy down the given notes as **C.W.**

STARTING WITH

- **Curve** : Any line drawn from a point without lifting the pen .

- **Closed curve** : It has no end point and encloses an area .

- **Open curve**: It has end points . Without any enclosed area.

- **Simple curve** : Curve that did not cross itself. E.g

- **Non simple curve** : Curve that crosses itself .

=

* **Now let us know about polygons**

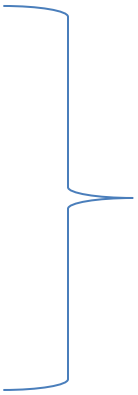
*** POLYGONS**

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

[A line segment have two end points]

EXAMPLES **:**

RECTANGLE :



THESE ALL ARE POLYGONS

SQUARE :

TRIANGLE :

Classifications of polygons

Polygons are classified on the basis of number of sides .

* NO. of sides *	Polygons *
3	Triangles
4	Quadrilateral
5	Pentagon
6	Hexagon
7	Heptagon
8	Octagon
9	Nonagon
10	Decagon

ANGLE SUM OF POLYGON : We have already studied about angle sum property of triangle .

Now here you will learn to find angle sum of polygon

Formula is : (n-2) × 180
(Where n = no. of sides)

Triangle	180 = (3-2) ×180
Quadrilateral	360 = (4-2) ×180
pentagon	540 = (5-2) ×180
hexagon	720 = (6-2) ×180
octagon	?
Nonagon	?
Decagon	?

Now finding of measure of each interior angle of any regular polygon

Note: **measure of each interior angle of a regular polygon = $\frac{(n-2) \times 180}{n}$**

- **SUM OF EXTERIOR ANGLES OF ANY POLYGON IS ALWAYS 360°**

THEREFORE :

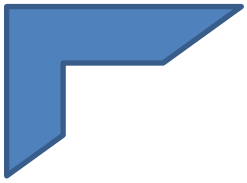
Measure of each exterior angle = 360/ n	[IN A RGULAR POLYGON]

TYPES OF POLYGONS

IRREGULAR

CONCAVE **CONVEX** **REGULAR**

CONCAVE POLYGON : A polygon in which at least one of the angle is greater than 180° and one of its its diagonal lie in the exterior

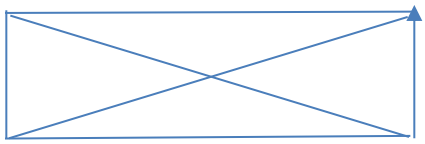


CONVEX POLYGON : A polygon in which all interior angles are less than 180°and diagonals lie in the interior

REGULAR POLYGON : A polygon in which all the angles and sides are equal .

IRREGULAR POLYGON: A polygon in which all the angles and sides are equal .

DIAGONAL: A line segment which join the two non consecutive vertices in a polygon is called its diagonal



NOW WE COME TO QUADRILATERALS

(NOTE QUAD means 4 sides)

REMEMBER

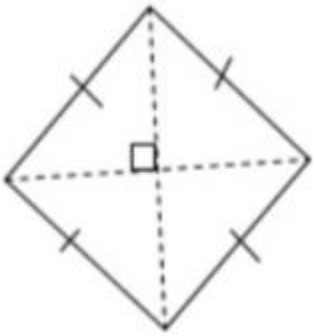
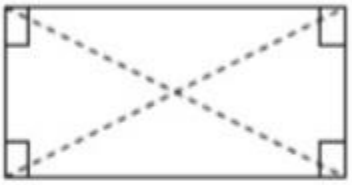
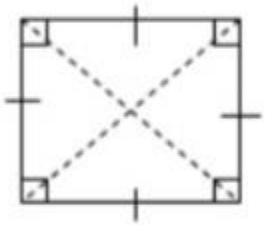
*Sum angle of any quadrilateral is 360

*Diagonals of a quadrilateral always intersect each other

***TYPES OF QUADRILATERALS**

1. SQUARE
2. RECTANGLE
3. PARALLEOGRAM
4. TRAPEZIUM
5. RHOMBUS
6. KITE

PROPERTIES OF QUADRILATERAL

QUADRILATERAL	PROPERTIES
 Parallelogram: A quadrilateral with each pair of opposite sides parallel.	1) Opposite sides are equal 2) Opposite sides are parallel 3) Opposite angles are equal 4) Diagonals bisect to each other
Rhombus: A parallelogram with sides of equal length. 	1) All sides are equal 2) Opposite sides are parallel 3) Diagonals are perpendicular (tegaklurus) to each other 4) Opposite angles are equal 5) Diagonals are the angles bisector 6) Diagonals are line of symetry
 **Rectangle:** A parallelogram with a right angle.	1) All angles are right angle 2) Opposite sides are equal and paralle 3) Diagonals are equal and bisect to ea other 4) It has 2 line of symmetry and 2 rotational symmetry
Square: A rectangle with sides of equal length. 	1) All sides are equal 2) All angles are right angle 3) Opposite sides are equal 4) Diagonals are equal and bisect to ea other at 90^0 (perpendicular) 5) Diagonals are bisector angle
Kite: A quadrilateral with exactly two pairs of equal consecutive sides	1) The diagonals are perpendicular to each other 2) One of the diagonals bisects the ot 3) One pair of angles are equal 4) 2 pairs of consecutive sides of equa measure. 5) It has two diagonal of different