UNDERSTANDING QUADRILATERALS

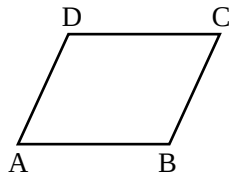
KINDS OF QUADRILATERALS

Types of quadrilateral :

(1) Parallelogram (2) Rhombus (3) Rectangle

(4) Square (5) Trapezium (6) Kite

(1) If opposite sides are equal and parallel then quadrilateral is called parallelogram ($||^{gm}$)



Properties :

(i) Opposite sides are equal i.e. $AB = CD$, $AD = BC$

(ii) Opposite sides are parallel i.e. $AB \parallel CD$, $AD \parallel BC$

(iii) Opposite angles are equal i.e. $\angle A = \angle C$; $\angle B = \angle D$

(iv) Sum of adjacent angles is $180°$ or adjacent angles are supplementary

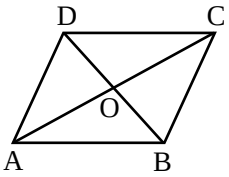
i.e. $\angle A + \angle C = 180°$ or $\angle A + \angle D = 180°$ etc.

(v) Length of both diagonals are different.

(vi) Diagonal bisect each other at same point.

(vii) One diagonal divides $||^{gm}$ into two congruent triangles i.e. $\Delta ABC \cong \Delta ADC$.

(2) A quadrilateral whose all sides are equal, is called rhombus. It is ||^{gm} also ∵ opposite sides are equal and parallel.



Properties :

(i) All sides are equal i.e. AB = BC = CD = DA

(ii) Opposite sides are parallel i.e. AB || CD, AD || BC

(iii) Opposite angles are equal i.e. $\angle A = \angle C$; $\angle B = \angle D$

(iv) Sum of adjacent angles is 180° or adjacent angles are supplementary

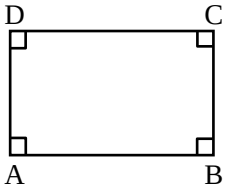
i.e. $\angle A + \angle C = 180°$ or $\angle A + \angle D = 180°$ etc.

(v) Length of both diagonals are different.

(vi) Diagonals bisect each other at right angle. i.e. AO = OC, OB = OD and BD ⊥ AC

(vii) A diagonal divides a rhombus into two congruent Δs.

(3) Rectangle : A rectangle is a ||^{gm} with all equal angles and value of each angle is 90°

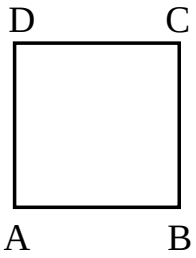


Properties :

(i) Diagonals are equal.

Other properties are same as parallelogram.

(4) Square : A square is a rectangle with all sides are equal or a square is a rhombus with all angles are equal (each 90°)

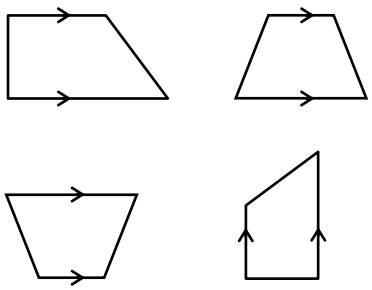


Properties :

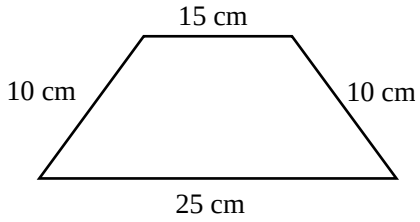
(i) Diagonals are of same length.

Other properties are same as rhombus.

(5) Trapezium : If opposite sides of one pair of quadrilateral are parallel & other two sides are non parallel then quadrilateral is called trapezium. The parallel sides are different in lengths.



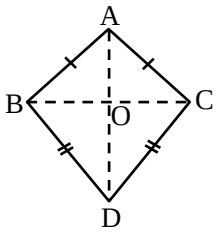
If non parallel sides are equal then it is called isosceles trapezium.



(6) Kite : This a is special type of a quadrilateral. In this adjacent sides are equal pair wise.

So there are exactly two distinct consecutive pairs of sides of equal length.

i.e. AB = AC and BD = DC



AD is longer diagonal & BC is smaller

AD bisects BC at right angle

i.e. BO = OC {not AO = OD}

also $\angle BOD = \angle DOC = \angle AOC = \angle AOB = 90°$ or $AD \perp BC$.