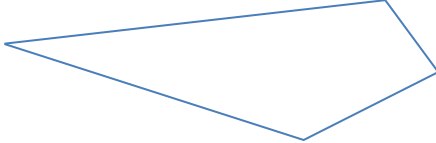


**Class 9**  
**Important Formulas**  
**Chapter 8 - Quadrilaterals**

S.no	Terms	Descriptions
1	Quadrilateral	<p>A quadrilateral is the union of four line-segments determined by four distinct coplanar points of which no three are collinear and the line-segments intersect only at end points. For ABCD to be quadrilateral, following condition are required</p> <ul style="list-style-type: none"><li>a) The four points A, B, C and D must be distinct and co-planar.</li><li>b) No three of points A, B, C and D are co-linear.</li><li>c) Line segments i.e. AB, BC, CD, DA intersect at their end points only.</li></ul>
		
<p><i>A quadrilateral is a four-sided polygon with four angles. There are many kinds of quadrilaterals. The five most common types are the parallelogram, the rectangle, the square, the trapezoid, and the rhombus.</i></p>		
2	Angle Property of Quadrilateral	<ul style="list-style-type: none"><li>1) Sum of all the interior angles is <math>360^\circ</math></li><li>2) Sum of all the exterior angles is <math>360^\circ</math></li></ul>

**3** Parallelogram

A quadrilateral which has both pairs of opposite sides parallel is called a parallelogram.

Its properties are:

- The opposite sides of a parallelogram are equal.
- The opposite angles of a parallelogram are equal.
- The diagonals of a parallelogram bisect each other.
- The diagonal of a parallelogram divide into two congruent triangles



A quadrilateral is said to a parallelogram if Opposite sides are equal **OR** Opposite angles are equal **OR** Diagonal bisects each other **OR** A pair of opposite are parallel and equal

**4** Trapezium

A quadrilateral which has one pair of opposite sides parallel is called a trapezium.





**5** Rhombus

Rhombus is a parallelogram in which any pair of adjacent sides is equal.

Properties of a rhombus:

- All sides of a rhombus are equal
- The opposite angles of a rhombus are equal
- The diagonals of a rhombus bisect each other at right angles.



6	Rectangles	<p>A parallelogram which has one of its angles a right angle is called a rectangle.</p> <p>Properties of a rectangle are:</p> <ul style="list-style-type: none"> <li>• The opposite sides of a rectangle are equal</li> <li>• Each angle of a rectangle is a right-angle.</li> <li>• The diagonals of a rectangle are equal.</li> <li>• The diagonals of a rectangle bisect each other.</li> </ul> 
7	Square	<p>A quadrilateral, all of whose sides are equal and all of whose angles are right angles.</p> <p>Properties of square are:</p> <ul style="list-style-type: none"> <li>• All the sides of a square are equal.</li> <li>• Each of the angles measures <math>90^\circ</math>.</li> <li>• The diagonals of a square bisect each other at right angles.</li> </ul> <p>The diagonals of a square are equal.</p> 
8	Important points about quadrilaterals	<p>a) A square is always a parallelogram.  b) A square is always a rectangle.  c) A rhombus can be square.  e) A rectangle has four right angles.</p>
9	Mid-point Theorems for Triangles	<p>1) The line segment joining the mid points of the two sides of the triangle is parallel to the third side</p> <p>2) A line drawn through mid-point of one side of a triangle and parallel to another side bisect the third side of the triangle</p>