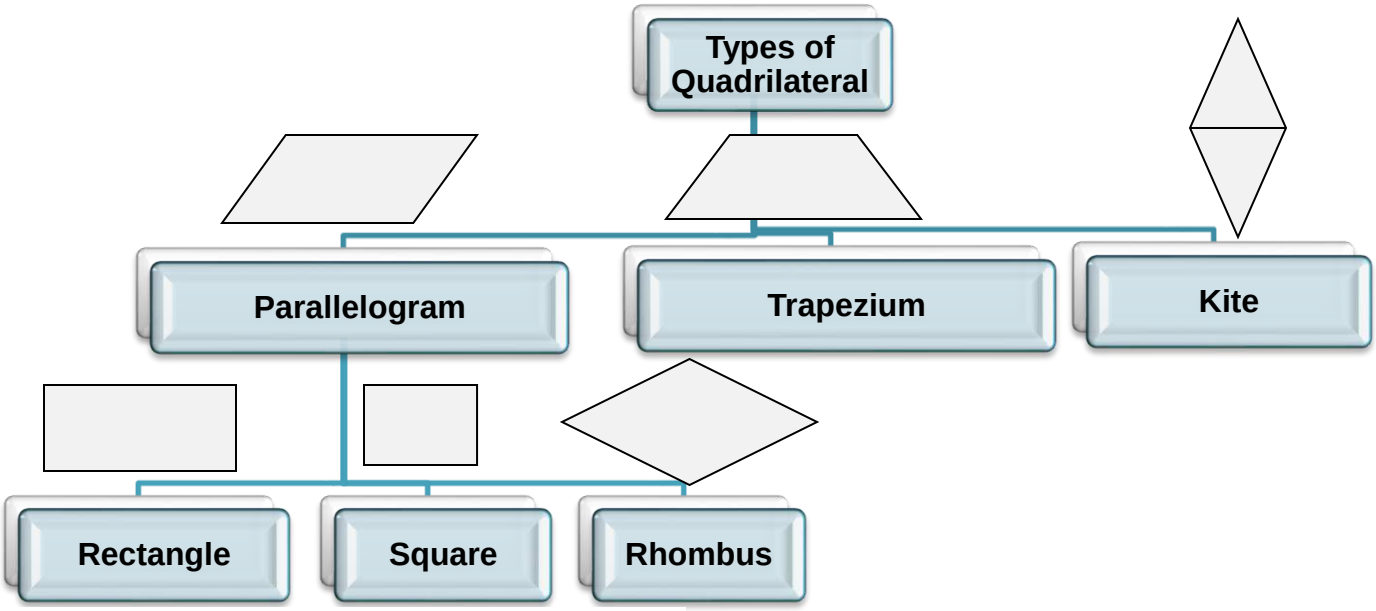
QUADRILATERALS

Quadrilateral is a plane figure bounded by four straight lines.
"Properties of quadrilaterals"

- Sum of four interior angles of a quadrilateral = 360 degrees
- Its two diagonals intersect.
- Line joining the mid points of any two adjacent sides is parallel to the coressponding diagonal
- Lines joining the midpoints opf the sides of a quadrilateral in an order form paralellogram.



PROPERTIES OF PARALLELOGRAM

- Opposite sides are equal and parallel.
- Opposite angles are equal.
- Diagonals bisect each other.
- The angles on the same side are supplementary
- Each diagonal bisect the parallelogram into two congruent triangles
- The angle bisectors of the opposite vertices are parallel
- The angle between angular bisectors of same side is a right angle

➢ **Properties of Rectangle:**

(i) Diagonals are equal and bisect each other.
(ii) The lines joining the midpoints of the sides in an order form a rhombus.
(iii) Line joining the midpoints of opposite sides of a rectangle is parallel to either of sides
(iv) Rectangle can be inscribed in a circle.

PROPERTIES OF TRAPEZIUM

- Diagonals intersect each other
- Line joining the midpoints of non parallel sides is parallel to the parallel side and its length is half of the sum of parallel sides.
- **Isosceles trapezium has non parallel sides equal and it can be inscribed in a circle.**

PROPERTIES OF KITE

A kite is a quadrilateral which has two pair of adjacent sides equal.

- **Properties of Square:**

  (i) Diagonals are equal and bisect at right angles.

  (ii) Diagonals bisect the opposite angles.

  (iii) Each diagonal divides the square into two congruent isosceles right angled triangles.

  (iv) It can be inscribed in a circle

  (v) A circle can be inscribed in a square touching all its sides.

- **Properties of Rhombus:**

  (i) All sides are equal

  (ii) Opposite angles are equal..

  (iii) Diagonals bisect each other perpendicularly.

  (iv) Diagonals are bisectors of the angles at the corresponding vertices.

Theorem : If a pair of opposite sides of a quadrilateral are equal and parallel, it is a parallelogram

Theorem : In a parallelogram opposite sides are eual, opposite angles are equal and each diagonal bisects the parallelogram

Theorem : The diagonals of parallelogram bisect each other.