Quadrilaterals

Definition

A quadrilateral is a simple closed figure with four sides.
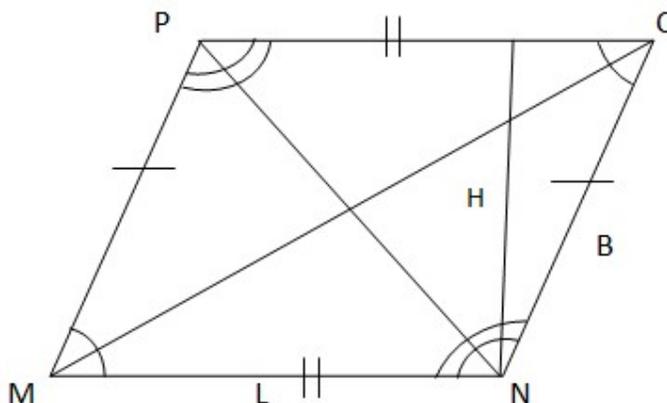
Types of quadrilaterals

Quadrilaterals can be broadly classified as the following:

- Parallelogram
- Rectangle
- Square
- Rhombus
- Trapezium
- Kite

One common property of all quadrilaterals is that the sum of all their angles equals 360°.

Parallelogram

If in a quadrilateral both the pairs of opposites sides be parallel then it is a parallelogram.
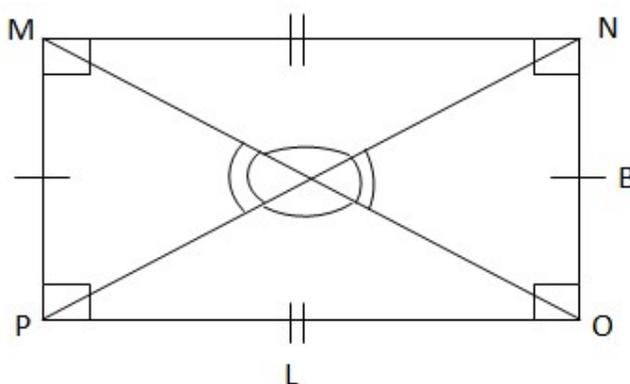

Properties of a parallelogram

- Opposite sides are parallel and congruent.

_____

- Opposite angles are congruent.

- Adjacent angles are supplementary.

- Diagonals bisect each other and each diagonal divides the parallelogram into two congruent triangles.

- If one of the angles of a parallelogram is a right angle then all other angles are right and it becomes a rectangle.

Rectangles

If in a parallelogram one angle be 90^0 it is known as Rectangle.

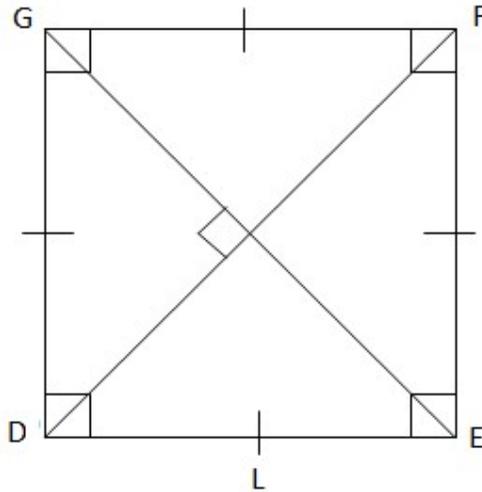

Properties of a Rectangle

- Opposite sides are parallel and congruent.

- All angles are right.

- The diagonals are congruent and bisect each other (divide each other equally).

- Opposite angles formed at the point where diagonals meet are congruent.

- A rectangle is a special type of parallelogram whose angles are right.

Squares

If in a rectangle adjacent sides are equal or in a rhombus one angle be **90⁰** it is known as Square.

Properties of a square:

- All sides and angles are congruent.

- Opposite sides are parallel to each other.

- The diagonals are congruent.

- The diagonals are perpendicular to and bisect each other.

- A square is a special type of parallelogram whose all angles and sides are equal.

- Also, a parallelogram becomes a square when the diagonals are equal and right bisectors of each other.

www.eduinfinite.com

Rhombus

If in a parallelogram, the adjacent sides are equal it is known as Rhombus.
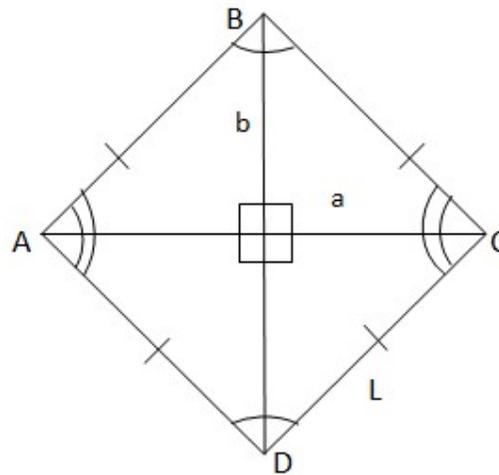
Properties of a Rhombus :

- All sides are congruent.

- Opposite angles are congruent.

- The diagonals are perpendicular to and bisect each other.

- Adjacent angles are supplementary (For eg., ∠A + ∠B = 180°).

- A rhombus is a parallelogram whose diagonals are perpendicular to each other.

www.eduinfinite.com
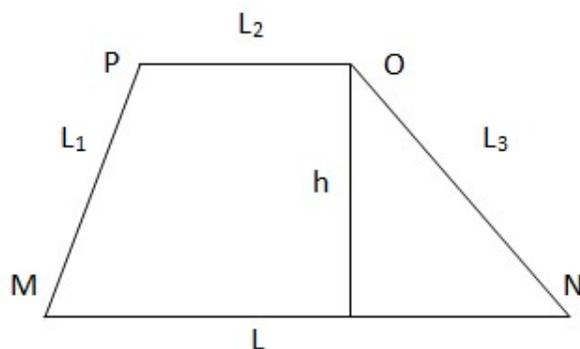
Trapezium
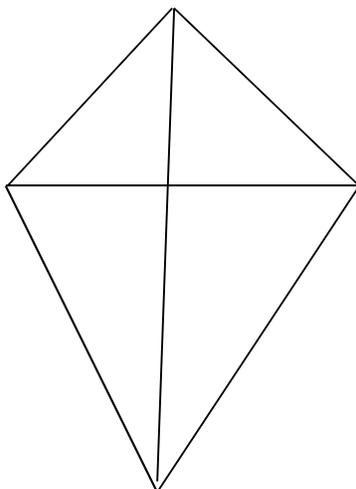

Properties of a Trapezium:

- The bases of the trapezium are parallel to each other (MN ∥ OP).
- No sides, angles and diagonals are congruent.

KITE

If the diagonals of a quadrilateral be perpendicular to each other, it is known as a Kite. If the two adjacent pairs of sides be equal in length it is known as Isosceles Kite.

The "Family Tree" Chart :

Quadrilateral

Kite

Trapezoid (US)
Trapezium (UK)

Parallelogram

Isosceles
Trapezoid

Rhombus

Rectangle

Square