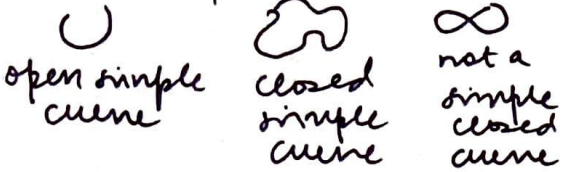


Quadrilaterals

Class VIII

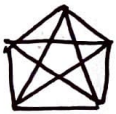
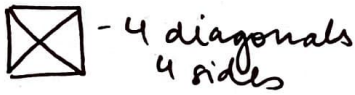
Curves can be open, closed and simple



Polygon - simple closed curve made up of line segments

no. of sides	polygon
3	triangle
4	quadrilateral
5	pentagon
6	hexagon
7	heptagon
8	octagon
9	nonagon
10	decagon

Diagonals -

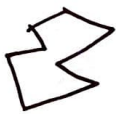


9 diagonals
6 sides

5 diagonals
5 sides

Regular polygon

Irregular polygon



- equilateral
- equiangular

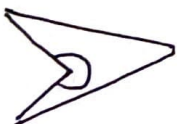
- not equilateral
or
equiangular

Convex polygon

Concave polygon

- at least one interior angle greater than 180°

- all interior angles less than 180°



Angle Sum Property of a Polygon

* Sum of all interior angles of a polygon is $(n-2)180^\circ$.

\therefore For quadrilaterals, sum of interior angles of a quadrilateral is 360° .

* Sum of measures of exterior angles of a polygon is 360° (no matter the no. of sides, always 360°)

$$\boxed{\text{no. of sides} \times \text{measure of each exterior angle} = 360^\circ}$$

$$\therefore \boxed{\text{no. of sides} = \frac{360^\circ}{\text{measure of exterior angle}}}$$

OR

$$\boxed{\text{no. of exterior angles} = \frac{360^\circ}{\text{measure of each angle}}}$$

Points:

1. Linear pairs

\rightarrow Sum of angles on a straight line is supplementary



$$\angle 1 + \angle 2 = 180^\circ$$

2.



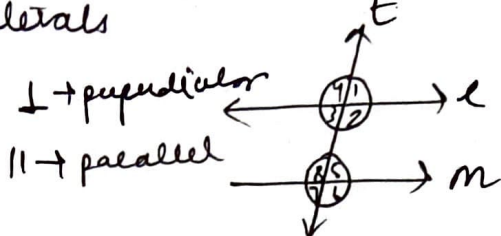
x and y are vertically opposite angles and vertically opposite angles are equal to each other

3. When exterior angle is given

$$\boxed{\text{int. angle} = 180^\circ - \text{exterior angle}}$$

Types of quadrilaterals

1. Trapezium
2. ||gm
3. Rhombus
4. Kite
5. Rectangle
6. Square



⊥ → perpendicular
 || → parallel

Transversal (l||m)

$\angle 1 = \angle 5$
 $\angle 2 = \angle 6$
 $\angle 4 = \angle 8$
 $\angle 3 = \angle 7$

Corresponding angles are equal

$\angle 1 = \angle 3$
 $\angle 2 = \angle 4$
 $\angle 6 = \angle 8$
 $\angle 5 = \angle 7$

vertically opp. angles

$\angle 2 + \angle 5 = 180^\circ$
 $\angle 3 + \angle 6 = 180^\circ$

int. angles on the same side of transversal are supplementary

$\angle 2 = \angle 8$
 $\angle 3 = \angle 5$

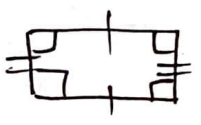
All int. angles are equal

Parallelogram:

1. opp sides are equal and parallel
2. opp. angles are of equal measure
3. Diagonals of a ||gm bisect each other
 → divide into equal parts
4. Adjacent angles are supplementary (sum = 180°)

Parallelograms

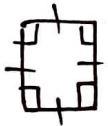
Rectangle



All prop. of ||gm

- opp. sides equal
- all angles 90°
- Diagonals are equal

Square



All prop. of ||gm, rhombus, rectangle

- all sides equal
- all angles 90°

Rhombus



All prop. of ||gm

- all sides equal
- Diagonals are perpendicular

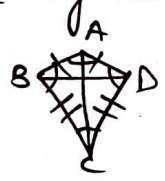
TRAPEZIUM

→ one pair of opp. sides are parallel.

KITE

→ Two pairs of adjacent equal sides

→ Diagonals ⊥ to each other



$\angle B = \angle D$
 $\angle A \neq \angle C$