UNIT 7

FUNDAMENTALS OF GEOMETRY

EXERCISE 7.1

1. *Define the following and illustrate through figures.*

(i) *Parallel lines*

If two lines are in a same plane and do not intersect each other at any point, the lines are called parallel lines.

(ii) *Transversal*

A line which intersects two lines or more than two lines is called transversal.

(iii) *Alternate angles of parallel lines*

If a transversal intersects two parallel lines, then two angles with different vertices, on the opposite sides of transversal and inside the parallel lines are called alternate angles.

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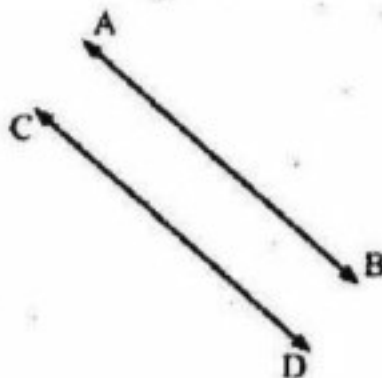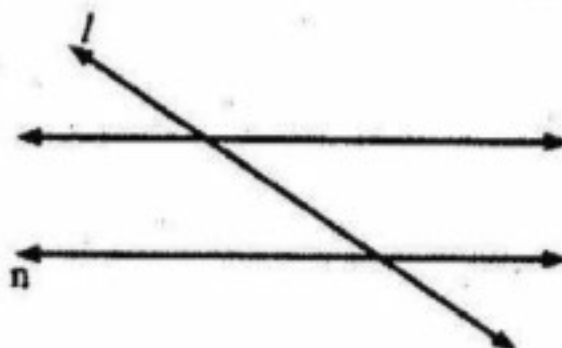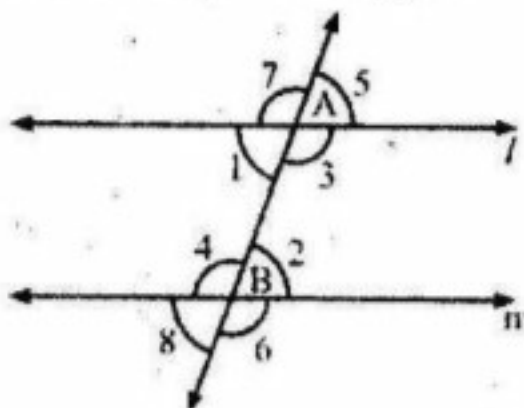Website: **www.easymcqs.com** , E-mail: **usmanrafiq111@gmail.com**

MATHEMATICS FOR 8TH CLASS (UNIT 7)

**(iv) Corresponding angles of parallel lines**

If a transversal intersects two parallel lines, then two angles with different vertices on same side of transversal, such that one is inside and the other is outside the parallel lines are called corresponding angles. In the above figure ($\angle 1$, $\angle 8$) (3, $\angle 6$), ($\angle 2$, $\angle 5$) and ($\angle 4$, $\angle 7$) are pairs of corresponding angles.

2. In the following figure, indicate parallel and non parallel lines.
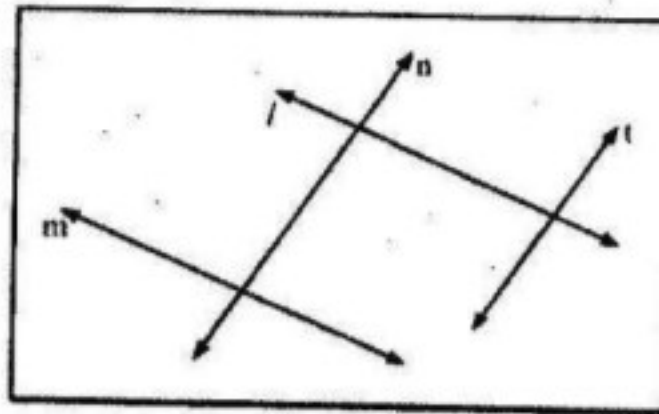
$= l // m, n // t$

3. In the following figure, write pairs of alternate angles, corresponding angles, vertically opposite angles and interior angles on same side or transversal.
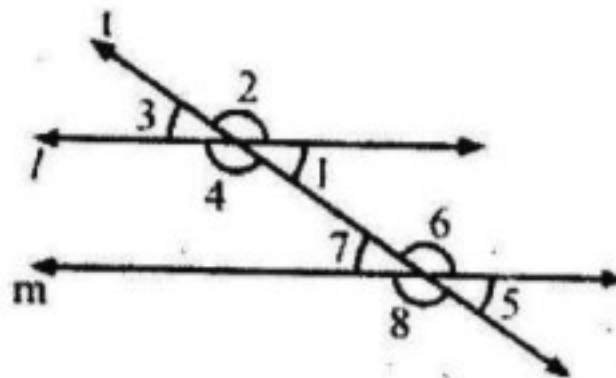
$=$ Alternate angles: ($\angle 1$, $\angle 7$), ($\angle 2$, $\angle 8$)

Corresponding angles: ($\angle 1$, $\angle 5$), ($\angle 2$, $\angle 8$), ($\angle 3$, $\angle 7$), ($\angle 4$, $\angle 8$)

Vertically opposite angles: ($\angle 1$, $\angle 3$), ($\angle 2$, $\angle 4$), ($\angle 5$, $\angle 7$), ($\angle 6$, $\angle 8$)
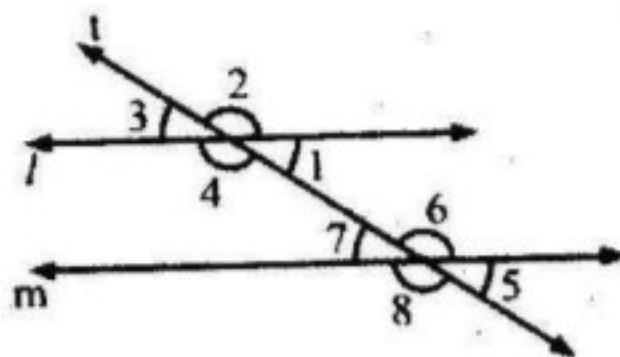
Interior angles on same side of transversal:

($\angle 1$, $\angle 8$), ($\angle 2$, $\angle 7$).

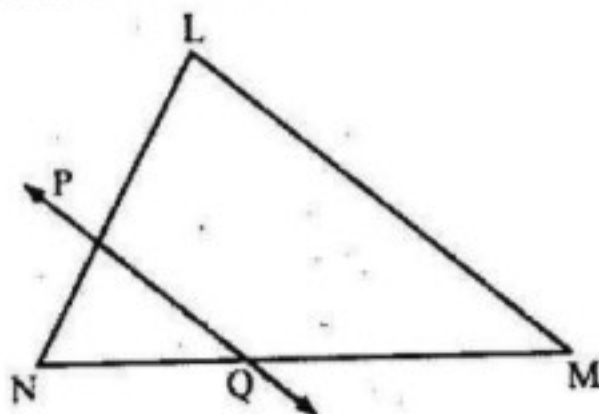**4. In the figure $l // m$ and $m \angle 1 = 25^0$, find the remaining angles.**

$$\Rightarrow \quad \angle 1 = \angle 3 = \angle 5 = \angle 7 = 25^{\circ}$$

$$\Rightarrow \quad \angle 2 = \angle 4 = \angle 6 = \angle 8 = 180^{\circ} - 25^{\circ} = 155^{\circ}$$

5. *In the figure PQ is parallel to LM, P is midpoint of LN, NQ = 2.5cm. Find NM.*

$$\overline{LP} = \overline{NP}$$

$$\overline{LN} = \overline{LP} + \overline{NP}$$

and $\quad \overline{NQ} = \overline{MQ}$

$$\overline{MN} = \overline{NQ} + \overline{MQ}$$

$$\overline{MN} = \overline{NQ} + \overline{NQ} \qquad (\because \ \overline{NQ} = \overline{MQ})$$
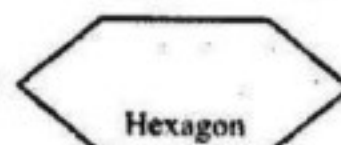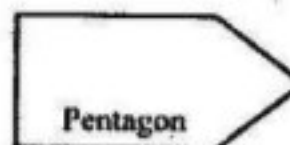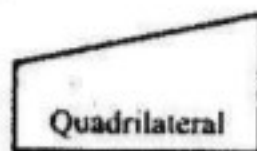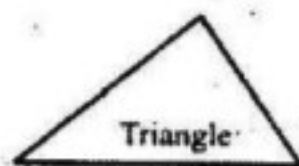
$$\overline{MN} = 2.5 + 2.5$$

$$\overline{MN} = 5cm$$

EXERCISE 7.2
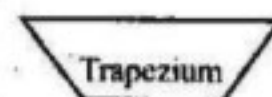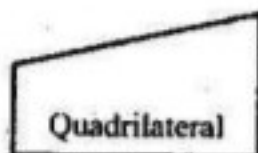
1. *Define the following and illustrate through figures.*

(i) **Polygon**

A plane shape having straight sides is called polygon.
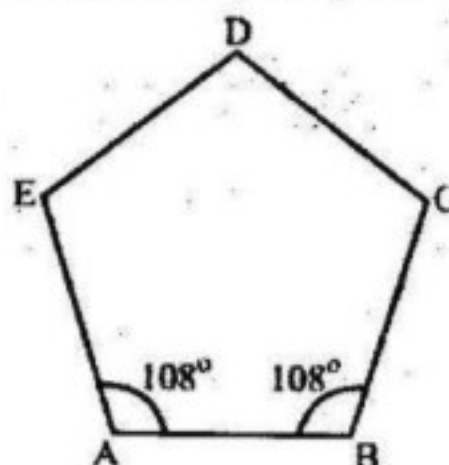
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(ii) *Quadrilateral*

Any figure having four sides is quadrilateral. A four sided polygon is called a quadrilateral. Sum of four angles of a quadrilateral is $360°$.
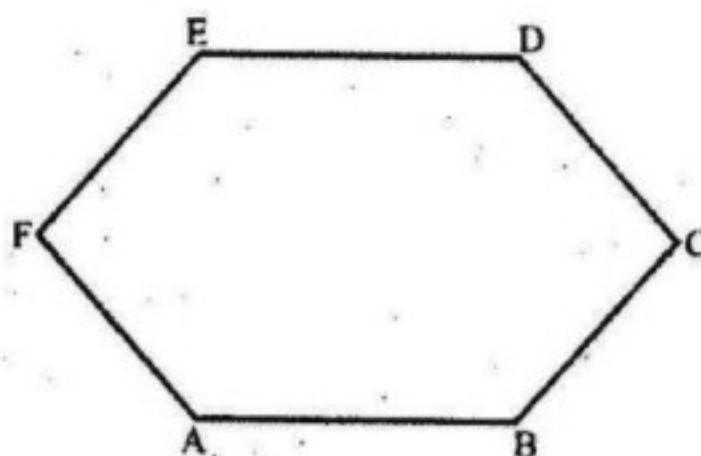

(iii) *Pentagon*

A polygon having five sides and five angles is called a pentagon. Sum of five angles of a pentagon is $540°$.

(iv) *Regular Polygon*

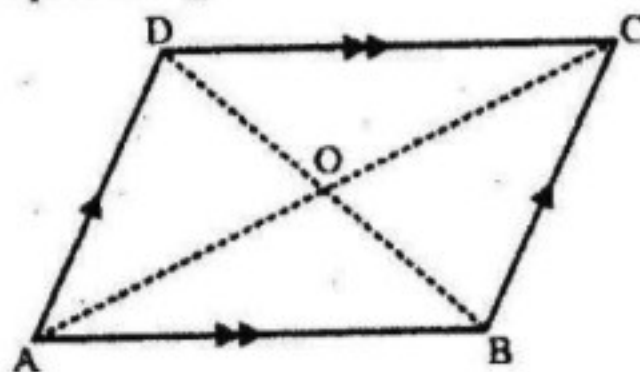A polygon in which all sides and all angles are equal in measure is called a regular polygon.

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2. **Define parallelogram and write any three properties of parallelogram.**
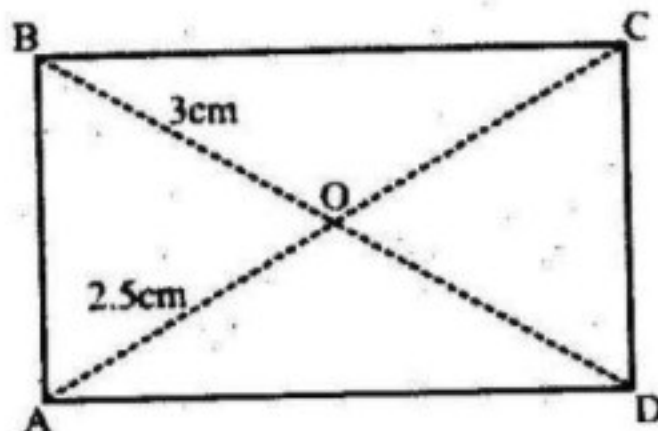
Parallelogram

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

Properties

(a) Opposite side and opposite angle of a parallelogram are equal.

(b) Diagonal of a parallelogram bisect each other.

(c) Diagonals meet each other at a point.

3. **In parallelogram ABCD, the diagonals AC and BD meet each other at point O. AO = 2.5cm and BO = 3cm. Find the length of diagonals.**

$$OA = OC$$
$$OA + OC = AC$$
$$2.5 + 2.5 = AC$$
$$\underline{AC = 5cm}$$
$$OB = OD$$
$$OB + OD = BD$$
$$30m + 3cm = BD$$
$$\underline{BD = 6cm}$$

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4. *If one angle of a parallelogram is 25°, find the remaining angles.*

Consider a parallelogram ABCD in which $m\angle A = 25°$

Opposite angles are $m\angle C = 25°$
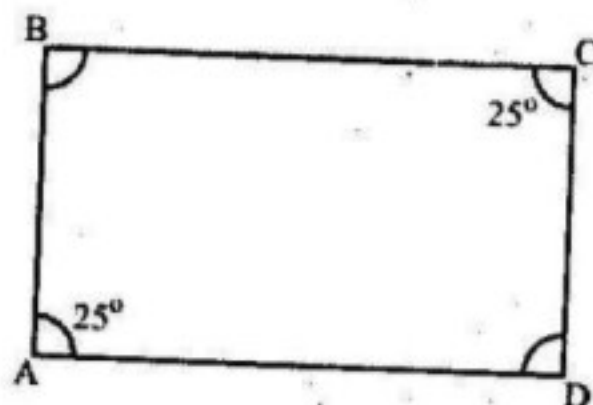
$m\angle A + m\angle B + m\angle C + m\angle D = 360°$

$m\angle B = m\angle D$

So, $25° + 25° + 2m\angle B = 360°$

$2m\angle B = 360° - 50°$

$m\angle B = \dfrac{310°}{2} = 155°$

$m\angle D = 155°$

5. *What is the measure of each angle of a regular hexagon?*

= Measure of each angle of a regular hexagon is equal to 120°.

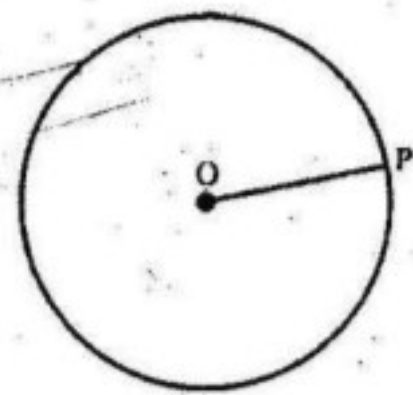**6.** *What is the measure of each angle of a regular octagon?*

= Measure of each angle of a regular octagon is equal to 135°.

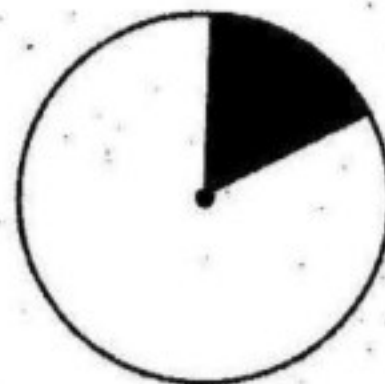### EXERCISE 7.3

1. **Define the following:**

(i) **Circle**

Locus of a particle in a plane which moves at a constant distance from a fixed point is called a circle.

(ii) **Sector of a circle**

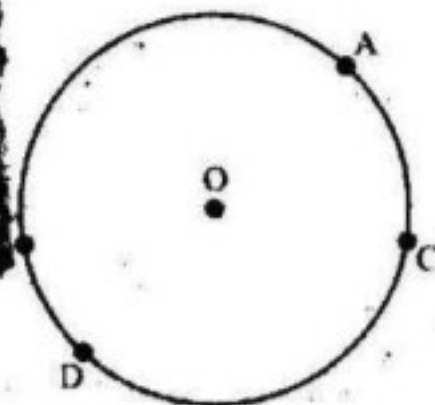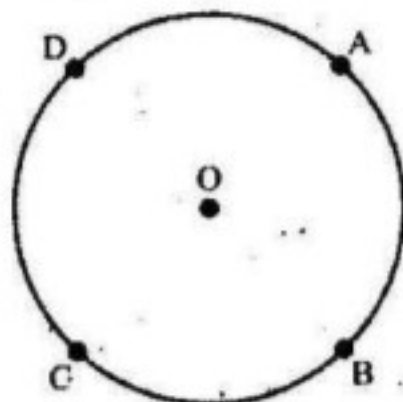Locus in a circle all the fixed points are equidistant from each other the fixed point is sector of a circle.

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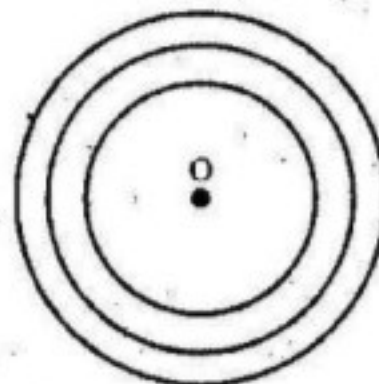==

(iii) Concyclic Points

The points that lie on a same circle are called concyclic points.

(iv) Concentric Circles

Two or more circles having same center are called concentric circles.

2. *The distance of a point P from centre of a circle of radius 5cm is 6cm. Check whether the point P lies inside, on or outside the circle. Justify your answer.*
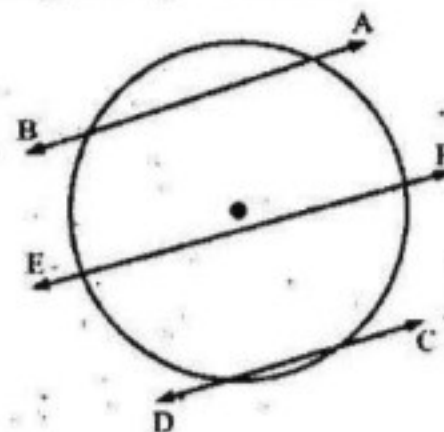
= The distance of point P from the center is greater than the radius, then it lies outside the circle. The region consisting of all such points is called exterior of the circle.
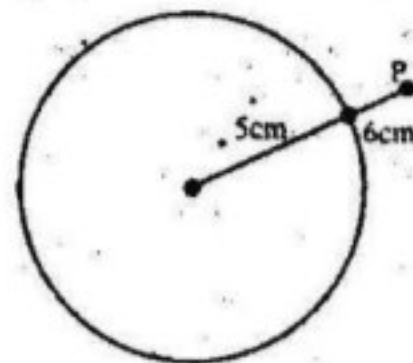
3. *Differentiate secants, chord and tangent of a circle.*

Secant

A line passing through two points of a circle is called secants of the circle.

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Chord

A line segment whose end points lie on a circle is called chord

of the circle. In above figure $\overline{EF}$ is a chord.

Tangent

A line touching a circle at one point and all other points of line lie outside the circle is called tangent of the circle. In above figure $\overline{DC}$ is a tangent.

4. **In the given figure identify secant, chord, radial segment and tangent of the circle.**
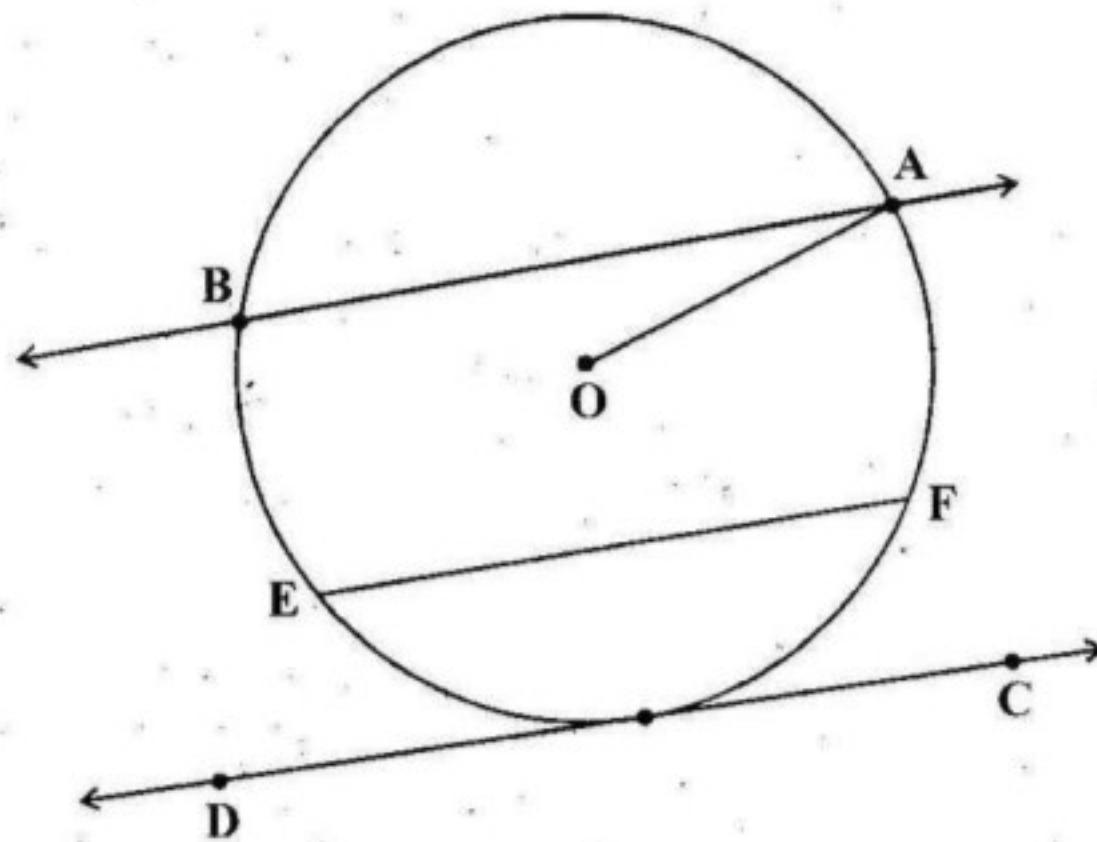
tangent = $\overleftrightarrow{CD}$ Secant = $\overleftrightarrow{AB}$

Chord = $\overline{EF}$

radial segment = $\overline{OA}$

= In the figure, BA is secant, EF is chord and DC is tangent and OA is radial segment of circle.