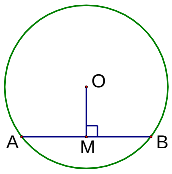
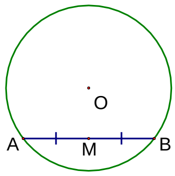
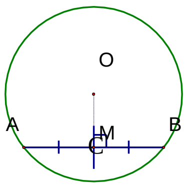
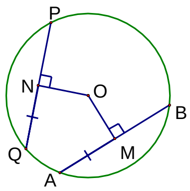
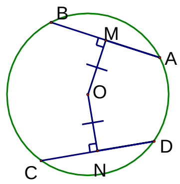
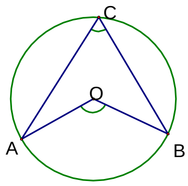
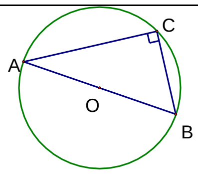
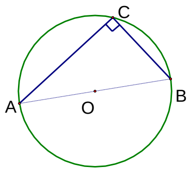
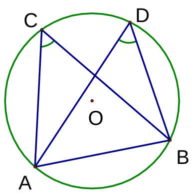
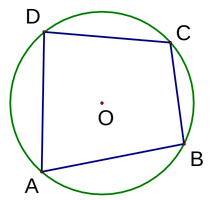
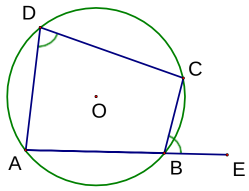
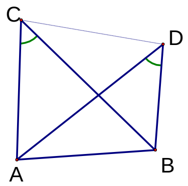
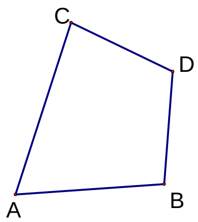
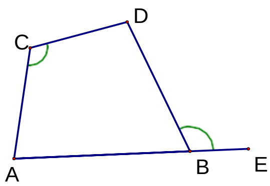
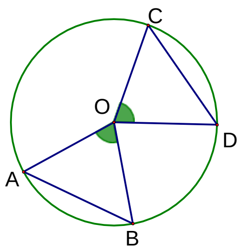
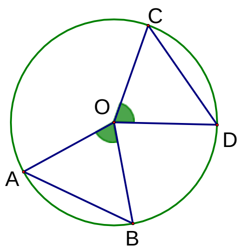
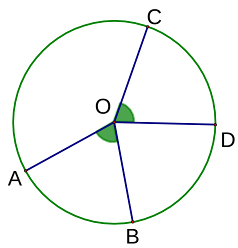
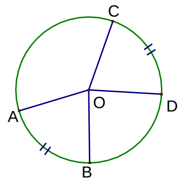
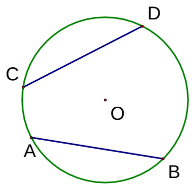
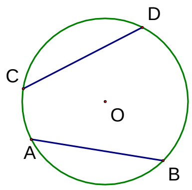
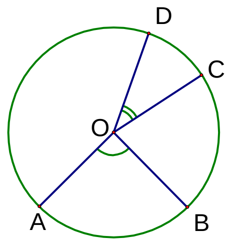
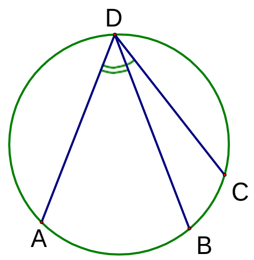
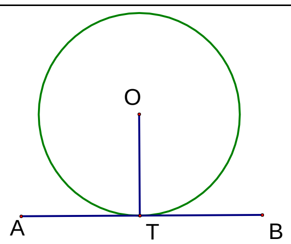
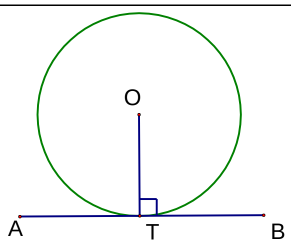
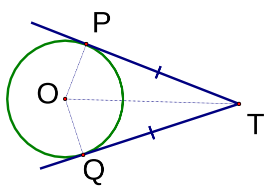
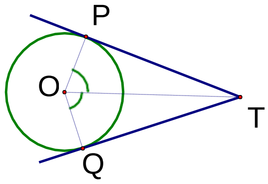
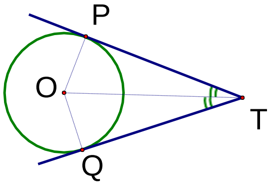
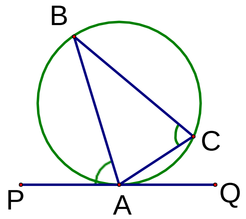
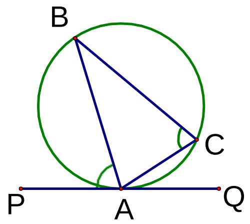
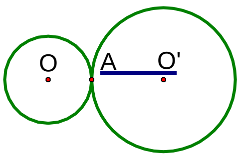
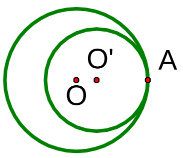
15. ABBREVIATION USED IN DEDUCTIVE GEOMETRY

B. Properties of Circle

No.	Diagram	Given Condition	Conclusion	Abbreviation
1		$OM \perp AB$	$AM = MB$	$\perp$ from centre to chord bisects chord
2		$AM = MB$	$OM \perp AB$	line joining centre to mid-pt of chord $\perp$ chord
3		$CM \perp AB$ and $AM = MB$	CM passes through O	$\perp$ bisector of chord passes through centre
4		$AB = PQ$	$OM = ON$	equal chords, equidistant from centre
5		$OM = ON$	$AB = CD$	chords equidistant from centre are equal
6		The angle at the centre and the angle at the circumference ***are subtended by the same arc (i.e. arc AB in this case)***	$\angle AOB = 2\angle ACB$	$\angle$ at centre twice $\angle$ at Θ^{ce}
7		AB is a diameter and C is a point on circle	$\angle ACB = 90^o$	$\angle$ in semi-circle
8		$\angle ACB = 90^o$	AB is diameter	converse of $\angle$ in semi-circle
9		AB is a chord	$\angle ACB = \angle ADB$	$\angle$s in the same segment

No.	Diagram	Given Condition	Conclusion	Abbreviation
10		*ABCD* is a cyclic quadrilateral	$\angle A + \angle C = 180^{\circ}$ $\angle B + \angle D = 180^{\circ}$	opp. ∠s, cyclic quad.
11		One side of a cyclic quadrilateral is produced to form an exterior angle	$\angle ADC = \angle EBC$	ext. ∠, cyclic quad.
12		$\angle ACB = \angle ADB$ and both *C* and *D* are on the same side of *AB*	*A*, *B*, *C* and *D* are concyclic	converse of ∠s in the same segment
13		$\angle A + \angle D = 180^{\circ}$ $\angle B + \angle C = 180^{\circ}$	*A*, *B*, *C* and *D* are concyclic	opp. ∠s supp.
14		*ABE* is a straight line $\angle ACD = \angle DBE$	*A*, *B*, *C* and *D* are concyclic	ext. ∠ = int. opp. ∠
15(i)		$\angle AOB = \angle COD$	$AB = CD$	equal ∠s, equal chords
15(ii)		$AB = CD$	$\angle AOB = \angle COD$	equal chords, equal ∠s
16(i)		$\angle AOB = \angle COD$	$\overset{\frown}{AB} = \overset{\frown}{CD}$	equal ∠s, equal arcs

No.	Diagram	Given Condition	Conclusion	Abbreviation
16(ii)		$\overset{\frown}{AB} = \overset{\frown}{CD}$	$\angle AOB = \angle COD$	equal arcs, equal $\angle$s
17(i)		$\overset{\frown}{AB} = \overset{\frown}{CD}$	$AB = CD$	equal arcs, equal chords
17(ii)		$AB = CD$	$\overset{\frown}{AB} = \overset{\frown}{CD}$	equal chords, equal arcs
18		$\angle AOB : \angle COD = m : n$	$\overset{\frown}{AB} : \overset{\frown}{CD} = m : n$	arcs prop. to $\angle$s at centre
19		$\angle ADB : \angle BDC = m : n$	$\overset{\frown}{AB} : \overset{\frown}{BC} = m : n$	arcs prop. to $\angle$s at Θ^{ce}
21		*AB* is the tangent to the circle at the point *T*	$AB \perp OT$	tangent $\perp$ radius
22		$ATB \perp OT$	*ATB* is the tangent to the circle at *T*.	converse of tangent $\perp$ radius
23(i)		Two tangents drawn from an external point *T* meet the circle at points *P* and *Q*	$TP = TQ$	tangent prop.

No.	Diagram	Given Condition	Conclusion	Abbreviation
23(ii)		Two tangents drawn from an external point T meet the circle at points P and Q	$\angle TOP = \angle TOQ$	tangent prop.
23(iii)		Two tangents drawn from an external point T meet the circle at points P and Q	$\angle OTP = \angle OTQ$	tangent prop.
24		PQ is the tangent to the circle at point A	$\angle BCA = \angle BAP$	$\angle$ in alt. segment
25		$\angle BCA = \angle BAP$	PQ is the tangent to the circles at A	converse of $\angle$ in alt. segment
26	 Touching externally  Touching internally	Two circles touch each other (either externally or internally)	OAO' and $OO'A$ are straight lines	prop. of two touching circles