



2027

**I'M UP AND DOWN,
AND ROUND & ROUND**

Lecture-4

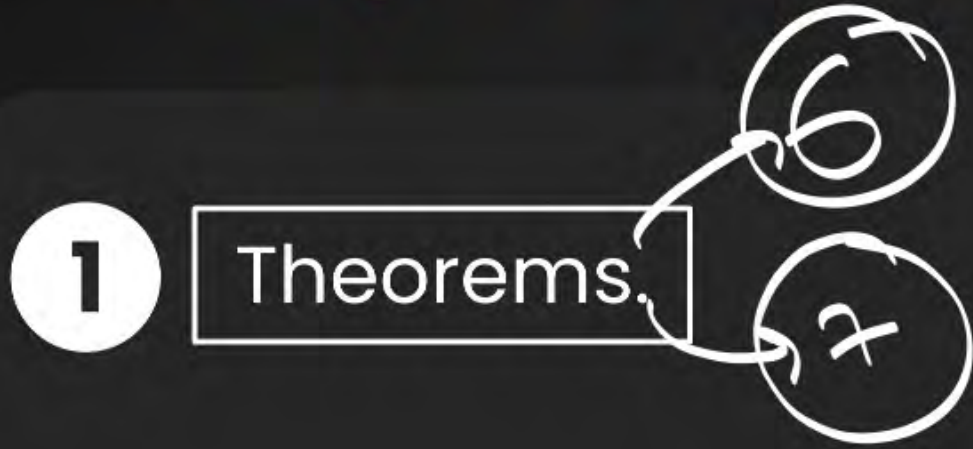
CLASS-9TH

MATHS

Ritik Sir



Topics To Be Covered



I am up and down and round
and round.

CIRCLES

Lecture - 4

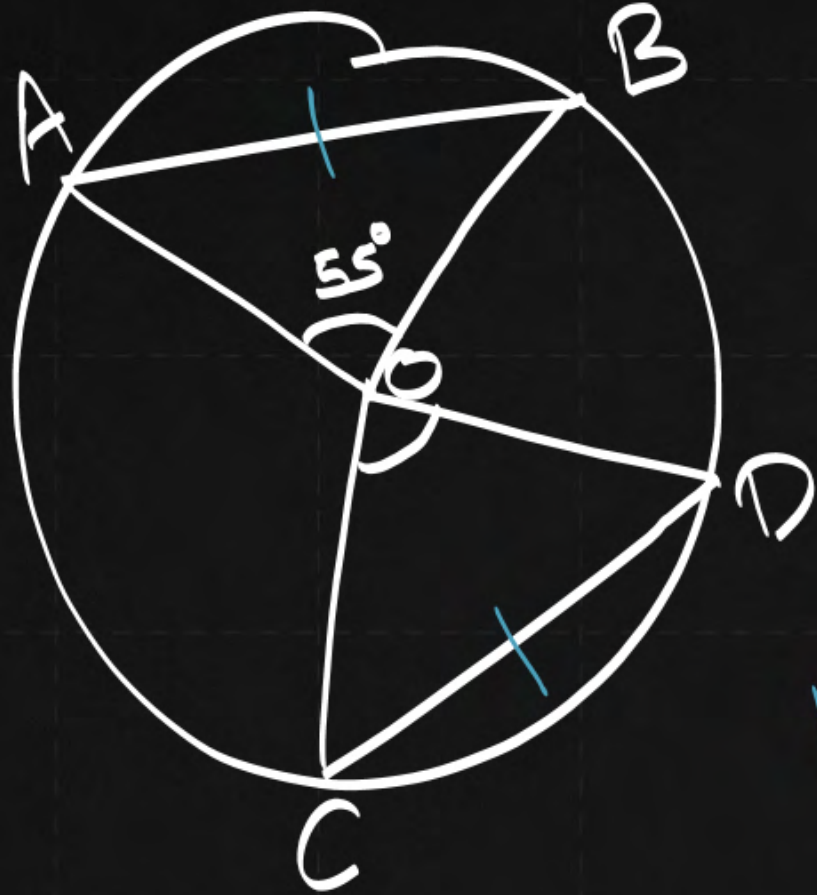
THEOREM 2

Equal chords of a circle subtend equal angles at the centre of the circle.

THEOREM 3

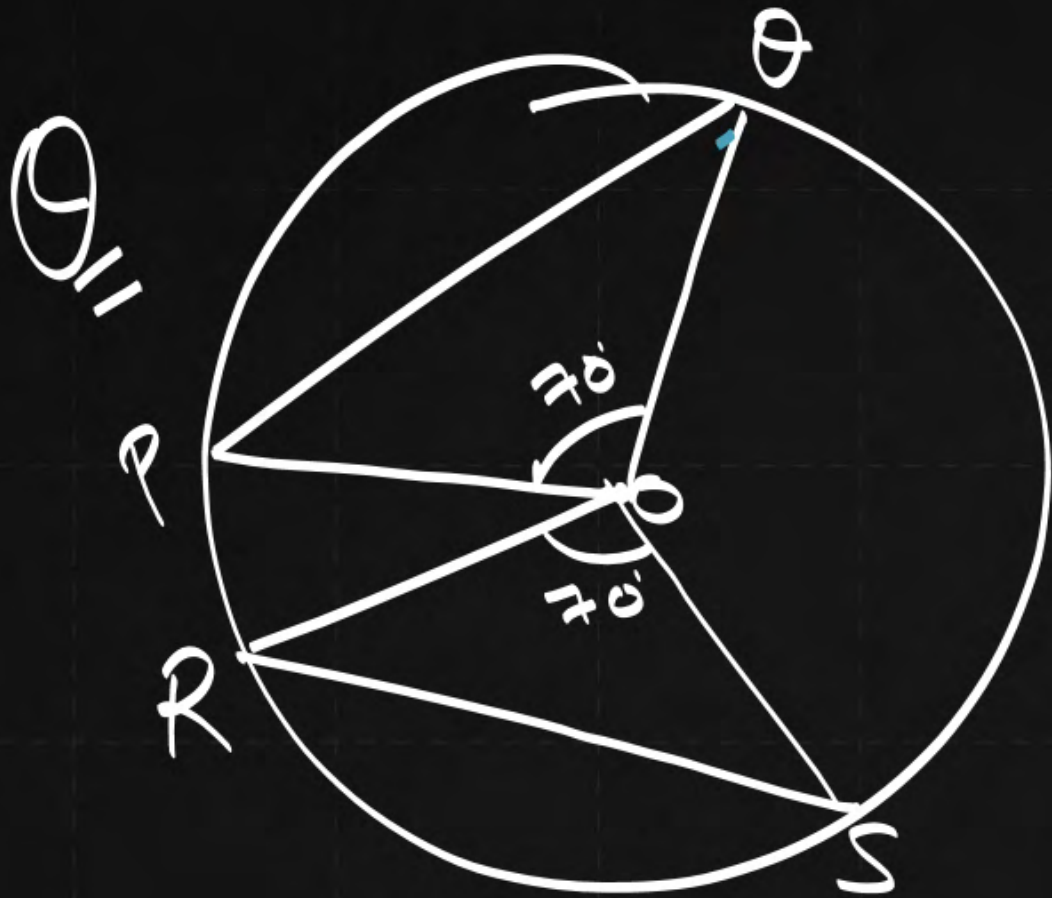
Chords of a circle that subtend equal angles at the centre are equal.

Q11



If $AB = CD$
then, $\angle COD = ?$

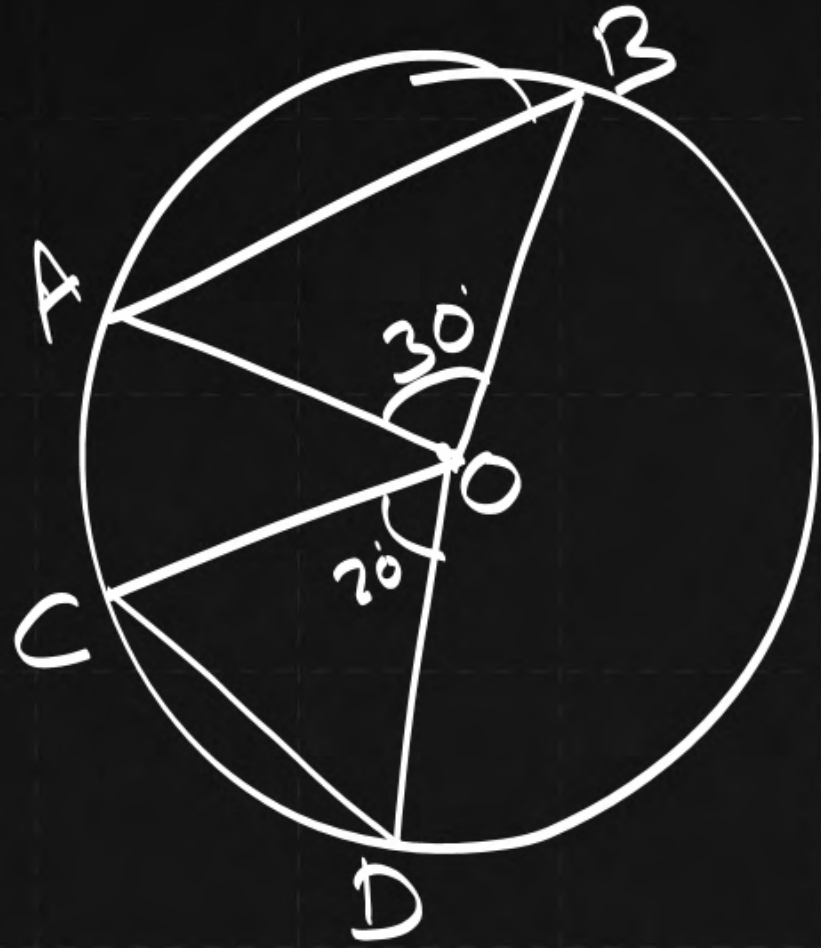
- A) 65°
- B) 50°
- ~~C) 55°~~
- D) NOTA



So, $\angle POQ = \angle ROS = 70^\circ$
and $PQ = 6.5\text{cm}$,
then $RS = ?$

- A) 6cm
- B) 7cm
- C) 8cm
- D) NOTA

Q11



Which of the following is correct?

- A) $AB = CD$
- ☒ B) $AB \neq CD$
- C) $AB = CD = 5\text{cm}$
- D) NOTA

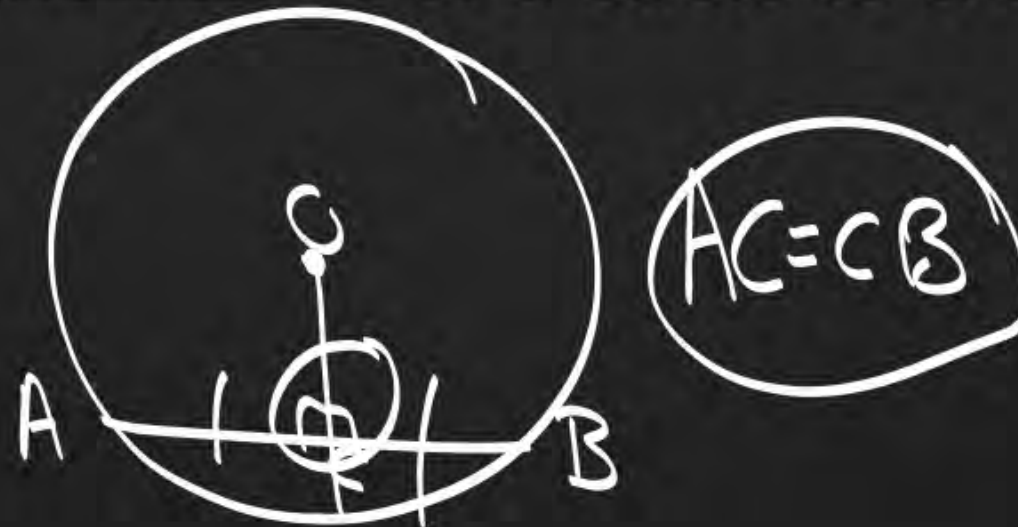
THEOREM 4

The line joining the centre of a circle and the midpoint of a chord of the circle is perpendicular to the chord.



THEOREM 5

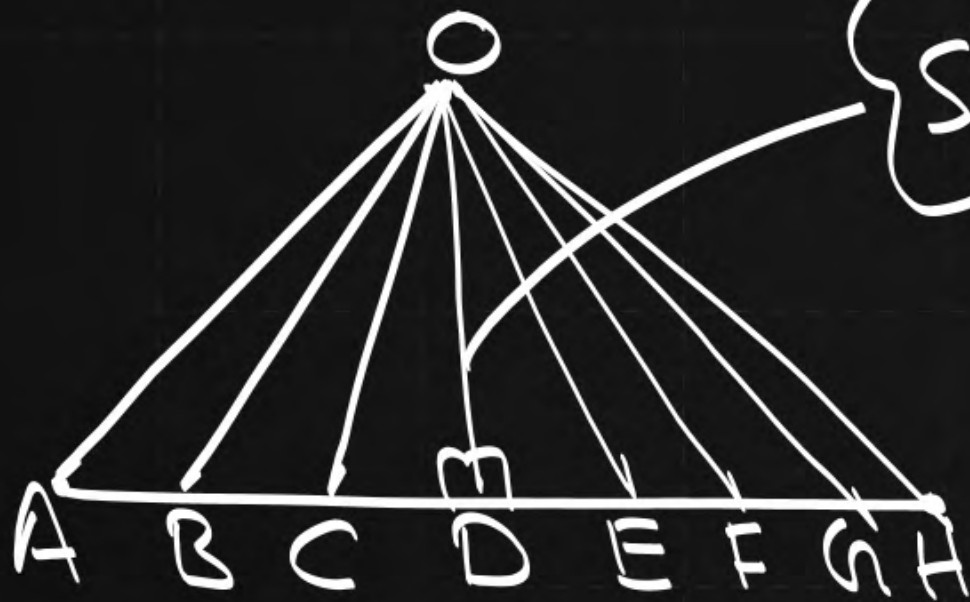
The perpendicular from the centre of a circle to a chord of the circle bisects the chord.



#CTR



Distance = Shortest distance.



Shortest distance = perpendicular distance

QUESTIONS



In a circle, a chord is 5 cm away from the centre. If the radius of the circle is 13 cm, what is the length of the chord?

$$H^2 = P^2 + B^2$$

$$13^2 = 5^2 + B^2$$

$$169 - 25 = B^2$$

$$144 = B^2$$

$$\pm \sqrt{144} = B$$

$$B = \pm 12$$

$$AP = 12 \text{ cm}$$

$$AB = 2AP \text{ (Theorem 5)}$$

$$= 2(12)$$

$$= 24 \text{ cm}$$

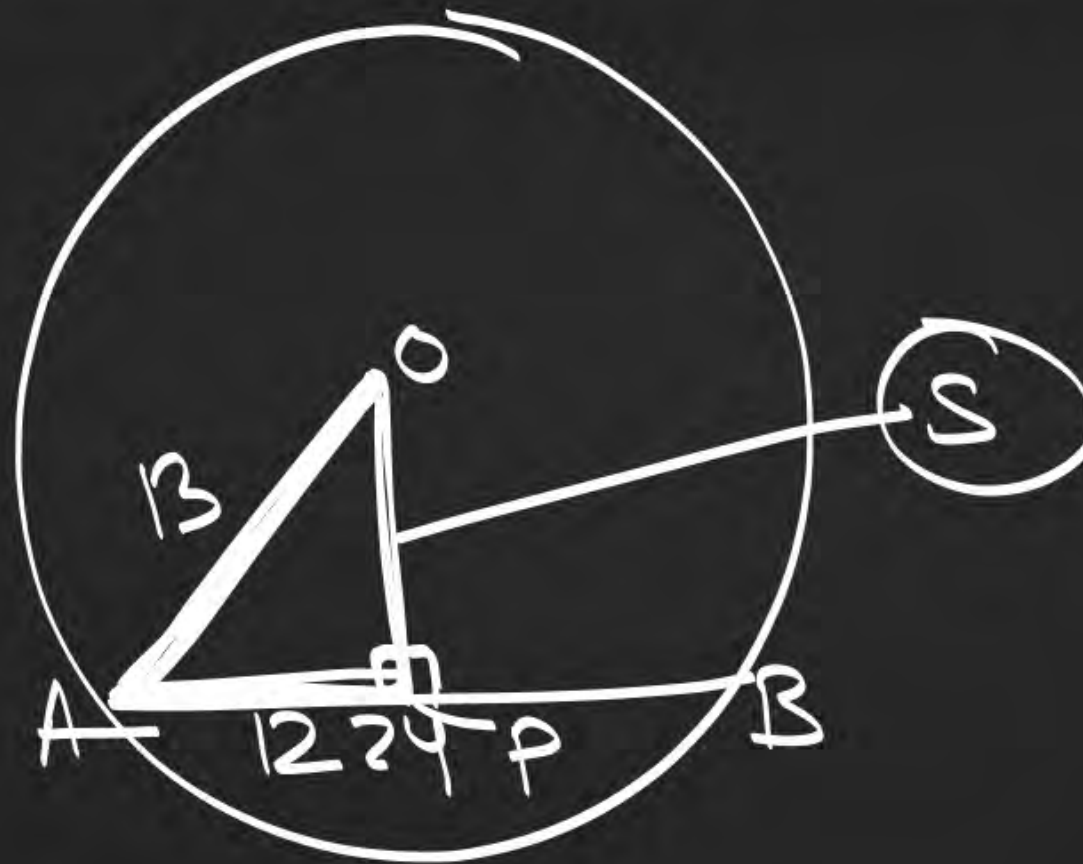


QUESTIONS



The diameter of a circle is 26 cm. A chord of length 24 cm is drawn in the circle. Find the distance from the centre of the circle to the chord.

- A) 6cm
- B) 7cm
- C) 8cm
- ~~D) NOTA~~



QUESTIONS

A circle has a radius of 15 cm. A chord is drawn. The distance from the centre of the circle to the chord is 9 cm. What is the length of the chord?

$$228 - 81 = 144$$

- A) 25cm
- ☒ B) 24cm
- C) 26cm
- D) NOTA



QUESTIONS

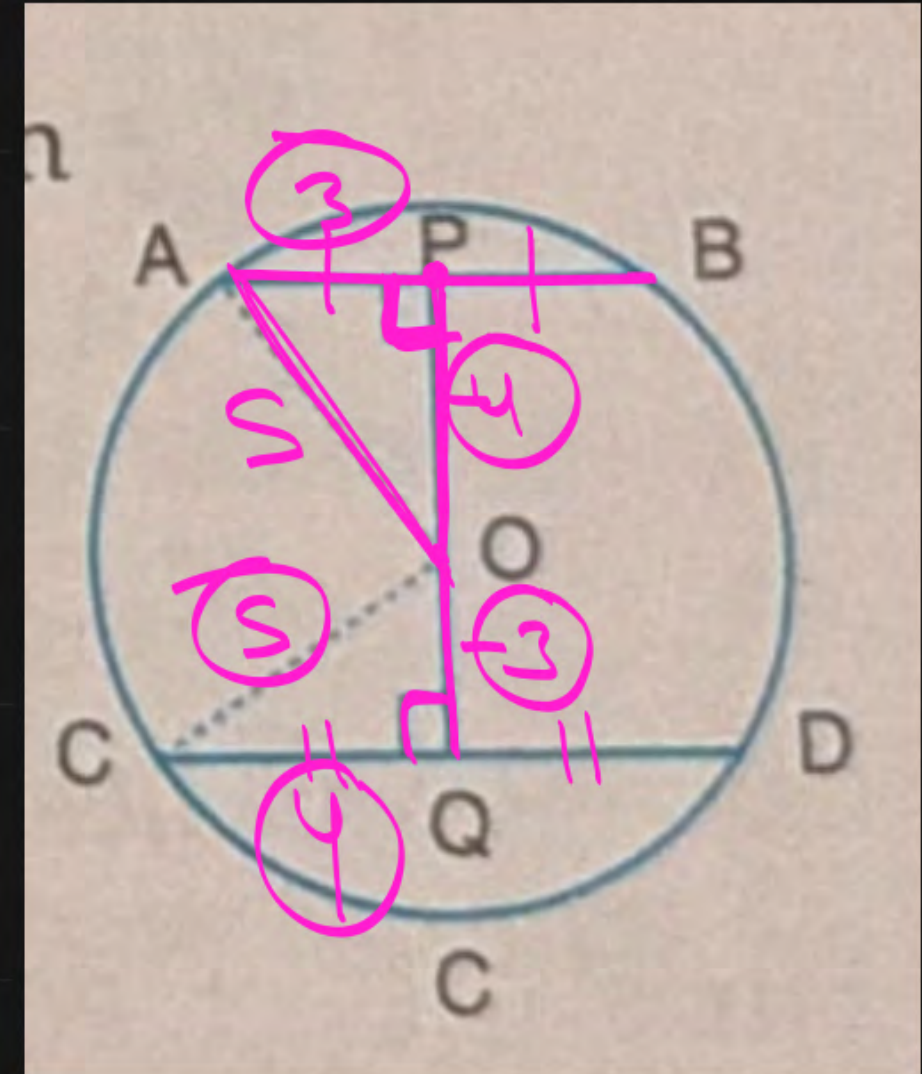
The distance of a chord of length 16 cm from the centre of a circle is 6 cm. Find the radius of the circle.

- A) 9cm
- B) 8cm
- C) 30cm
- ☒ D) NOTA

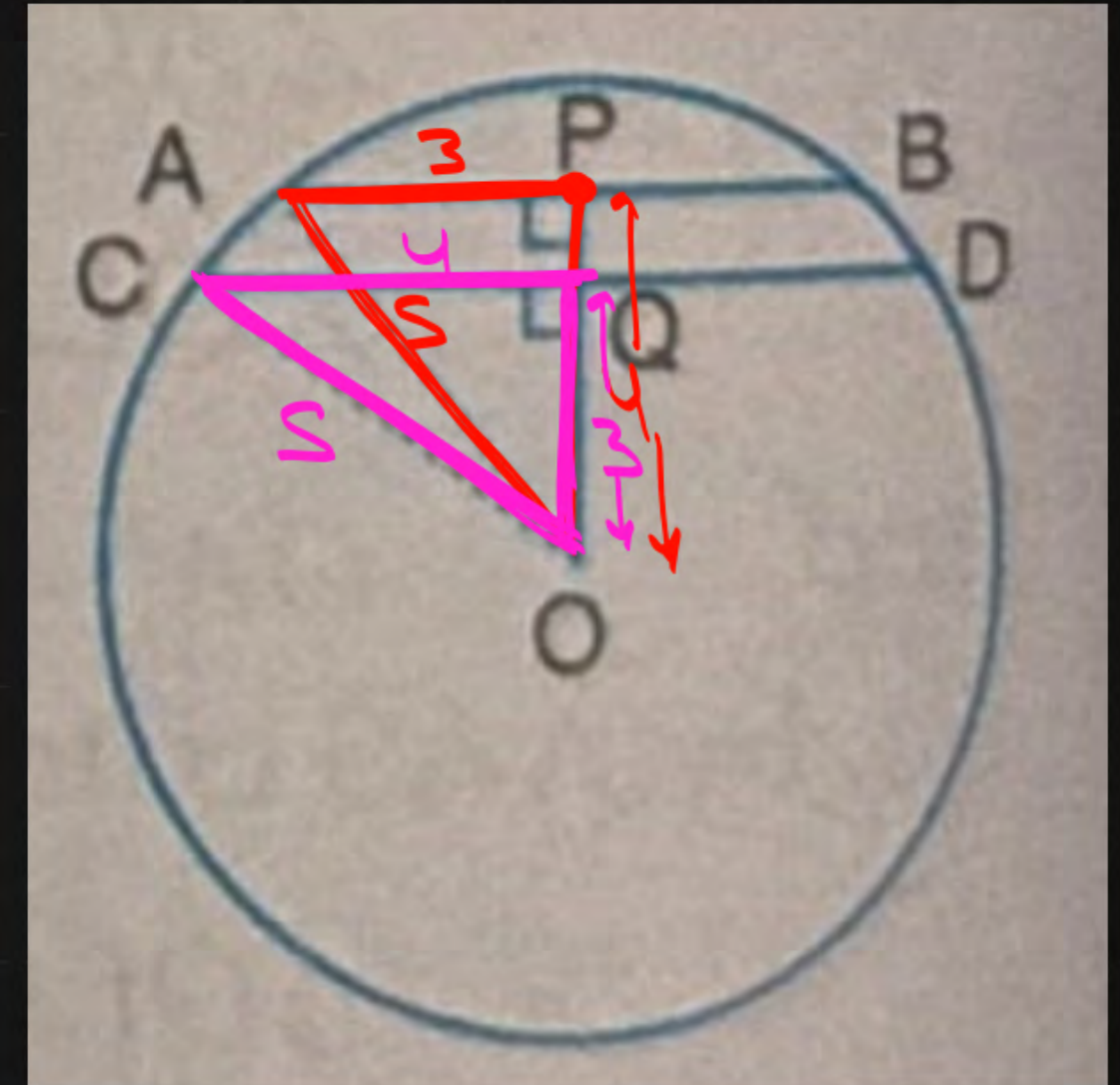
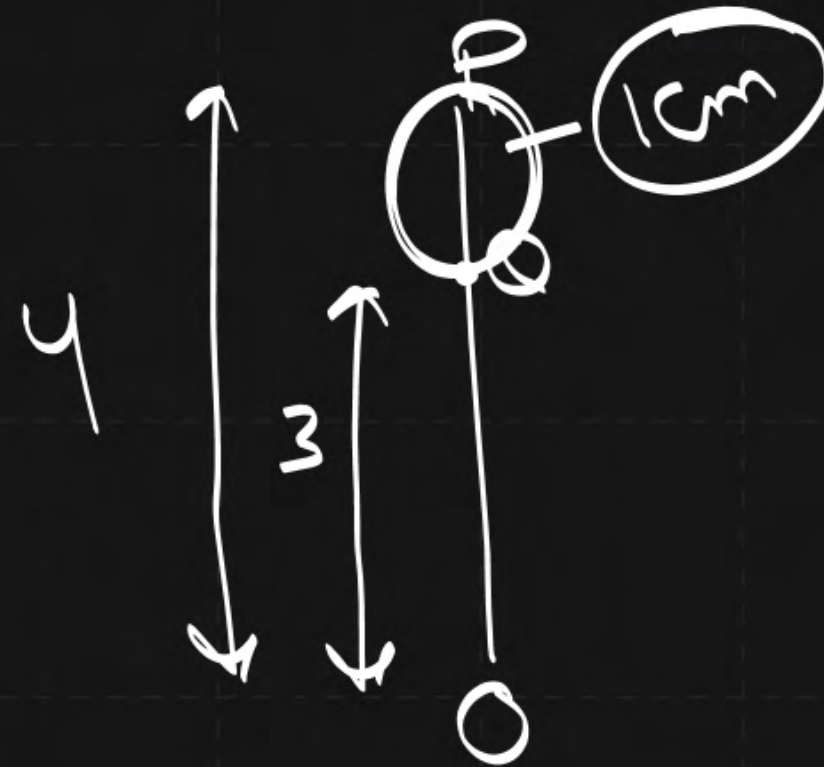


XXXXXXXXXX In Fig. 15.46, O is the centre of the circle of radius 5 cm. $OP \perp AB$, $OQ \perp CD$, $AB \parallel CD$, $AB = 6$ cm and $CD = 8$ cm. Determine PQ .

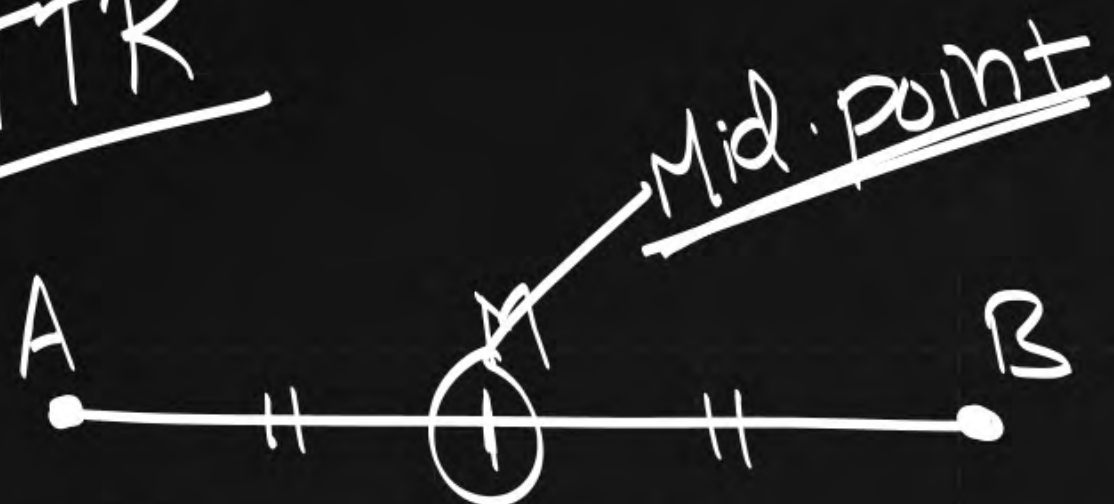
7cm



In Fig. 15.45, O is the centre of the circle of radius 5 cm. $OP \perp AB$, $OQ \perp CD$, $AB \parallel CD$, $AB = 6$ cm and $CD = 8$ cm. Determine PQ .



#TTR



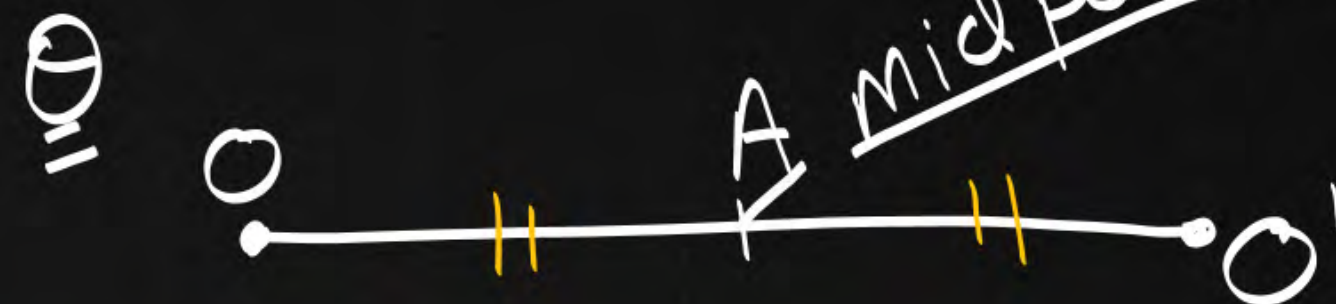
$$\rightarrow AM = MB.$$

$$\rightarrow AB = 2AM$$

$$AB = 2BM.$$

$$\rightarrow AM = \frac{1}{2}AB$$

$$BM = \frac{1}{2}AB.$$



$$\rightarrow OA = OA'$$

$$\rightarrow OO' = 2OA$$

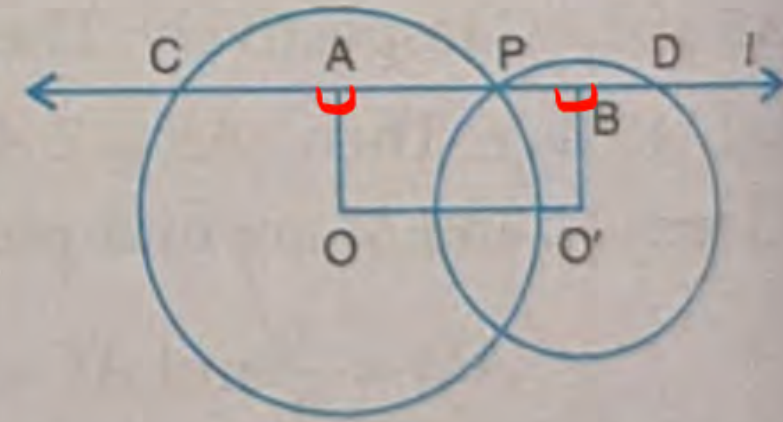
$$OO' = 2OA'$$

$$\rightarrow OA = \frac{1}{2}OO'$$

$$OA' = \frac{1}{2}OO'$$

Two circles whose centres are O and O' intersect at P . Through P , a line l parallel to OO' intersecting the circles at C and D is drawn. Prove that $CD = 2 OO'$.

[NCERT EXEMPLAR]



Giv: $OA \perp CP$, $OB \perp PD$.

$$CP = 2AP \text{ --- (1)}$$

$$DP = 2BP \text{ --- (2)}$$

The $\perp$ from the centre to a chord bisects the chord

$$\text{(1) + (2)}$$

$$CP + DP = 2AP + 2BP$$

$$CD = 2(AP + BP)$$

$$CD = 2AB$$

$$\boxed{CD = 2OO'}$$

H.P

THEOREM 6



Chords of a circle having the same length are all at the same distance from the centre of the circle.

$$G: AB = CD.$$

$$To\ prove: OM = ON.$$

Proof: $\because AB = CD.$
 $\frac{1}{2}AB = \frac{1}{2}CD.$

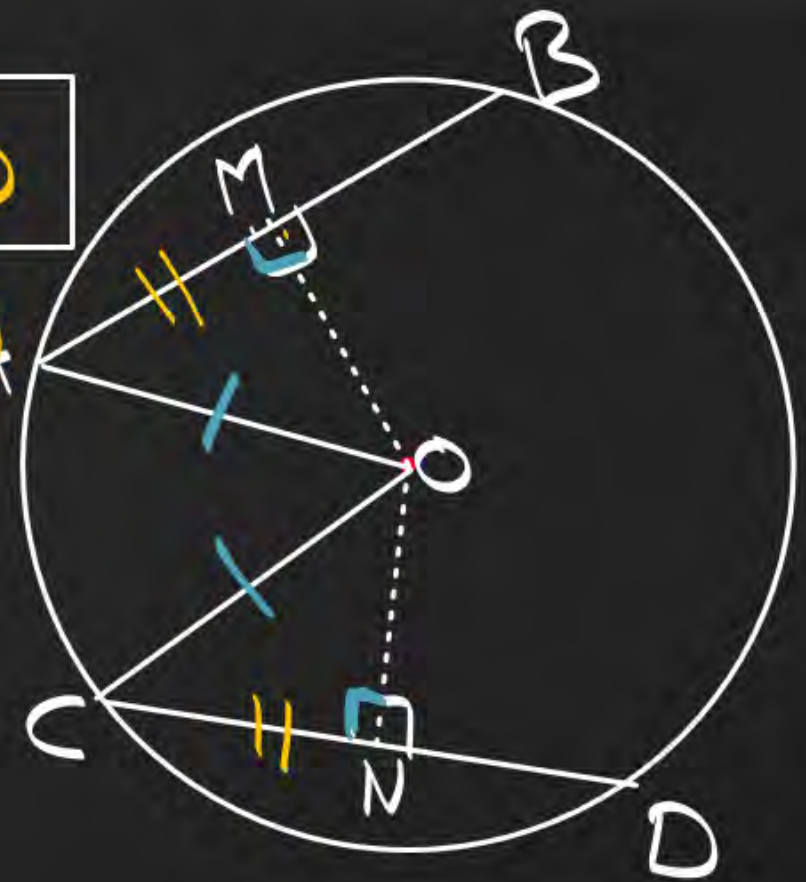
$$AM = CN$$

The perp. from the centre to a chord bisects the chord

By RHS

$$\triangle AMO \cong \triangle CNO$$

$\xrightarrow{CPCT} OM = ON$



THEOREM 7

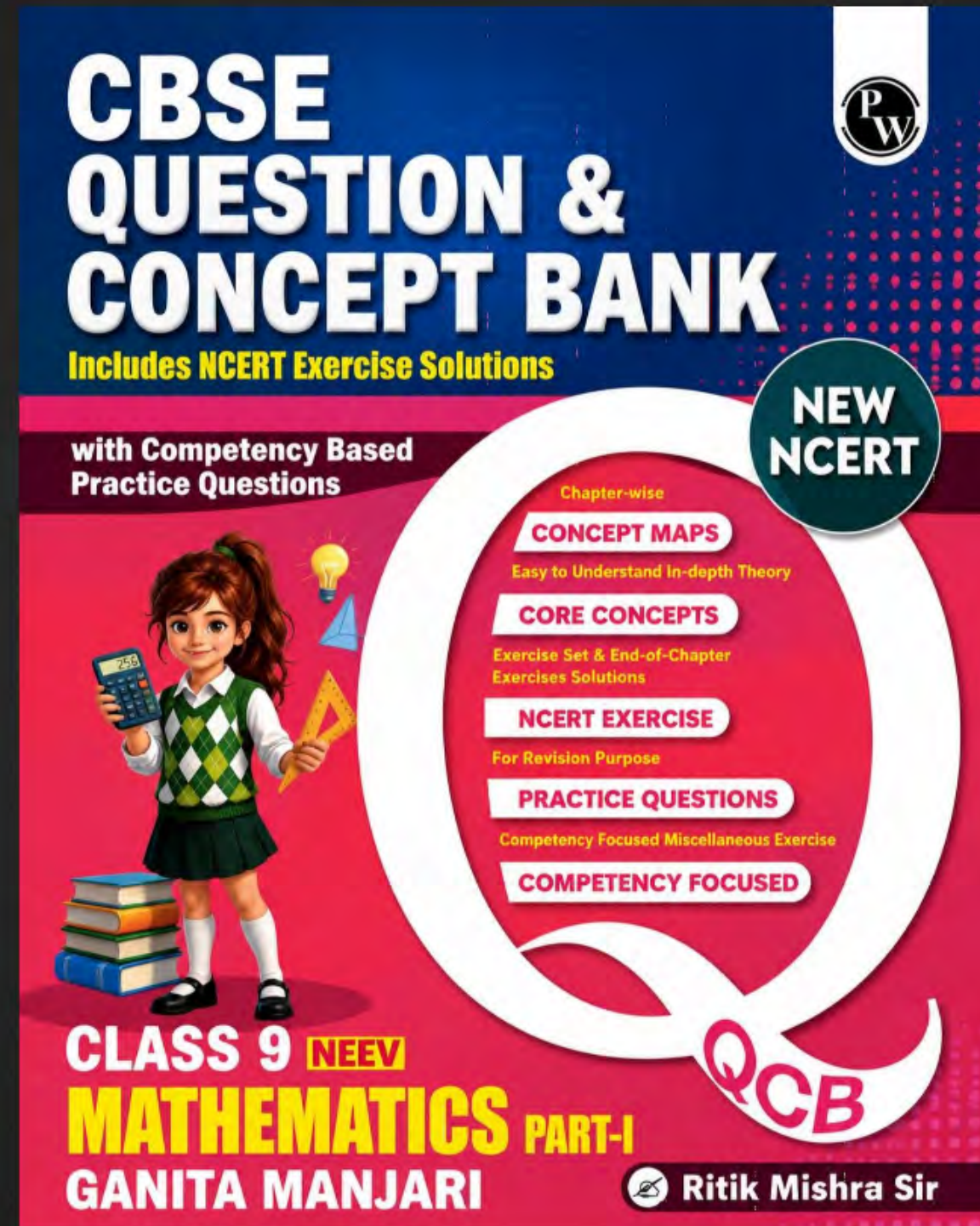
(Converse of theorem 6)

Chords of a circle that are equidistant from the centre have equal length.

#GPK



FOR QUESTION PRACTICE



Thank You !

- *Work Hard.*
- *Dream big.*
- *Never give up.*