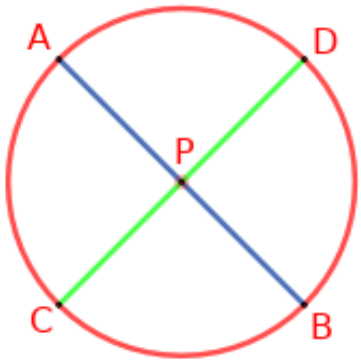
MATHEMATICS ONLINE CLASS X ON 16-08-2021

CIRCLES

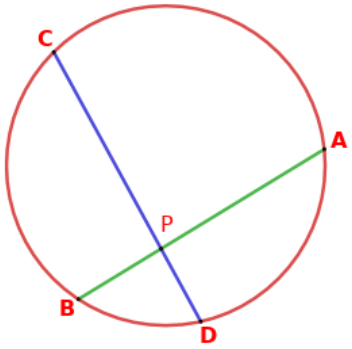
click

Discussed in previous class



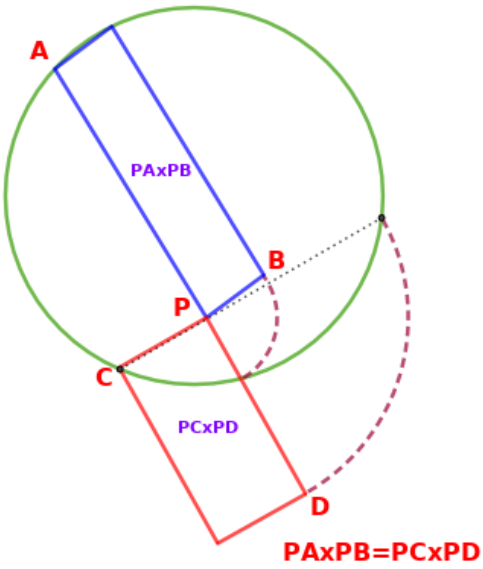
If two diameters intersects we get four parts PA, PB, PC and PD.
Here PA = PB = PC = PD (Radii of circle)

If two non diametrical chords AB and CD intersecting at a point P inside the circle.
Here also we get 4 parts PA, PB, PC and PD.
PA × PB = PC × PD



IF TWO CHORDS OF A CIRCLE INTERSECT WITHIN THE CIRCLE THEN THE PRODUCT OF THE PARTS OF THE TWO CHORDS ARE EQUAL

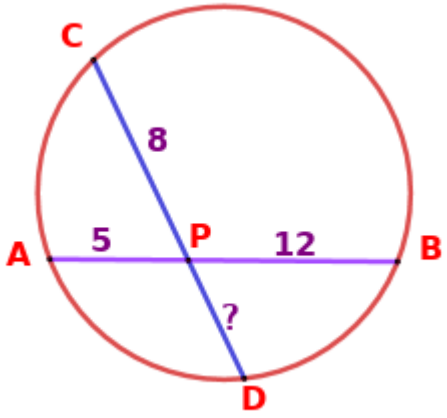
IF TWO CHORDS OF A CIRCLE INTERSECT WITHIN THE CIRCLE, THEN THE RECTANGLE FORMED BY THE PARTS OF THE SAME CHORD HAVE EQUAL AREA.



Question

The chords AB and CD intersect at a point P. If PA = 5 cm, PB = 12 cm, PC = 8 cm. Find the length of PD.

Answer



PA = 5 cm

PB = 12 cm

PC = 8 cm

PA × PB = PC × PD

5 × 12 = 8 × PD

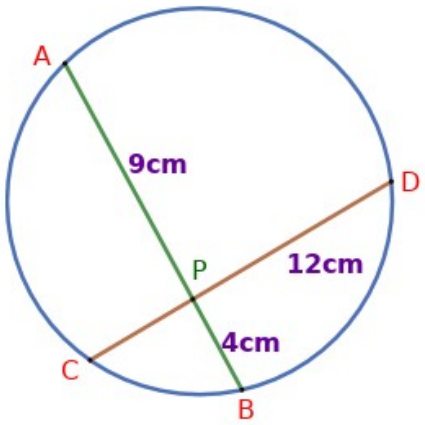
60 = 8 × PD

$$PD = \frac{60}{8} = 7.5 \text{ cm}$$

Answer to assignment of previous class

Question

The chords AB and CD intersect at a point P. If PA = 9 cm, PD = 12 cm, AB = 13 cm. Find the lengths of PB, PC and CD.



Answer

PA = 9 cm

PD = 12 cm

AB = 13 cm

PB = AB – PA

=13 – 9 = 4 cm

PA × PB = PC × PD

9 × 4 = PC × 12

36 = 12 × PC

$$PC = \frac{36}{12}$$

= 3 cm

CD = PC + PD

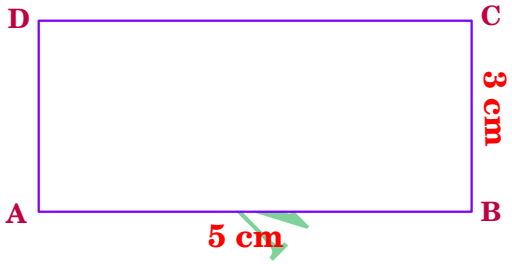
= 3 + 12 =15 cm

Construction

Draw a rectangle of width 5 cm and height 3 cm. Draw a rectangle of the same area with width 6 cm.

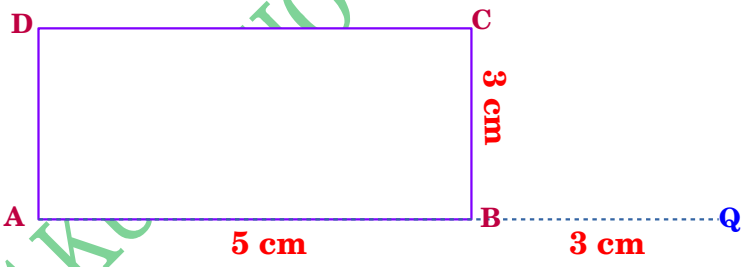
Steps

1. Draw a rectangle of width 5 cm and height 3 cm.



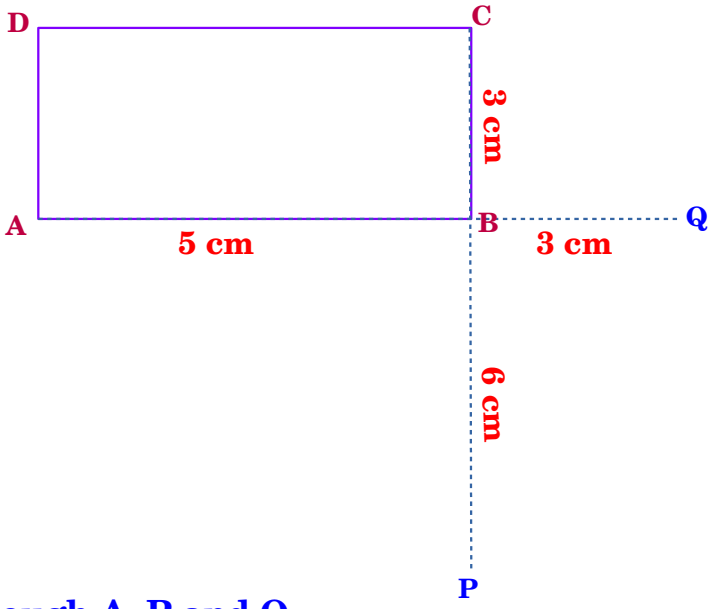
2. Extend AB by 3 cm to Q

(Extending length= 3 cm which is the height of the rectangle)



3. Extend BC by 6 cm to P

(Extending length= 6 cm which is side of the rectangle to be constructed)



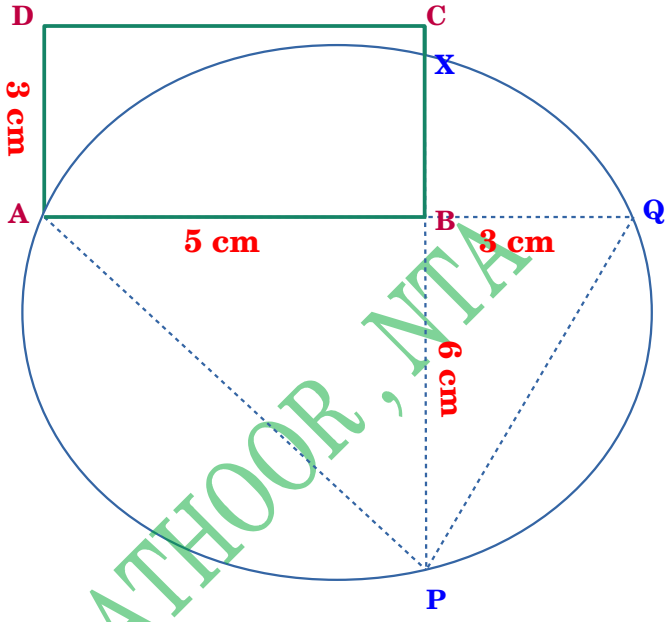
4. Draw a circle passing through A, P and Q.

(For this, Join AP and QP. Draw perpendicular bisectors of AP and QP.

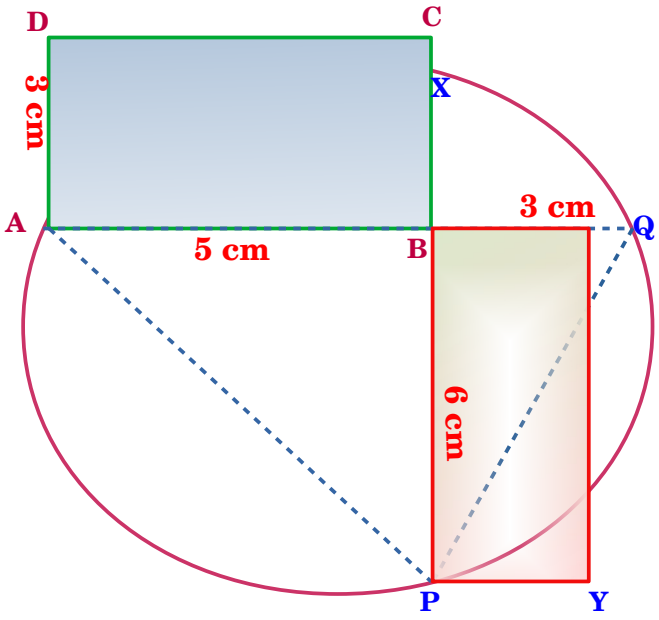
Draw the circumcircle of the ΔAPQ).

[Circumcentre is the intersecting point of perpendicular bisector of sides of the ΔAPQ]

Mark the intersecting point of circle and height of the rectangle as X .



5. Draw a rectangle with PB as length and BX as the width which is the rectangle having same area of rectangle ABCD.



ASSIGNMENT

Draw a rectangle of length 4 centimetres and width 3 centimetres .

Draw another rectangle of the same area with one side 5 centimetre