Online Class – X – 26 **24 / 08 / 2021**

2 . Circles – Class 14

To view class

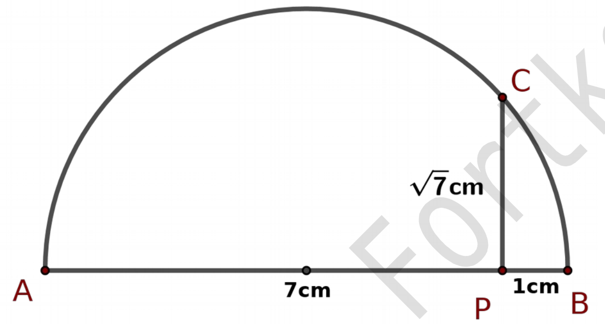
Answers of last class assignment

Q1) Draw a line of length $\sqrt{7}$ cm.

Ans) Find two numbers whose product is 7.

7 , 1 are the numbers. $(7 \times 1 = 7)$

Draw line AB of length 7 + 1 = 8 cm and do the construction as per the steps given under construction 4 (Q1) .



Q2) Draw a square of area 8 cm^2.

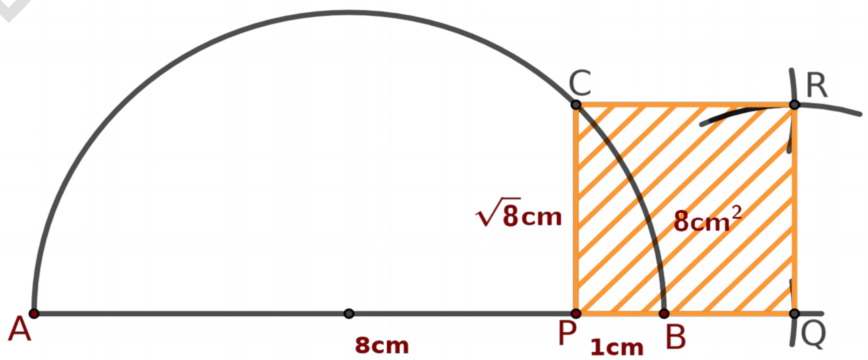
Ans) Given , area of square = $8cm^2$

$\therefore$ side of square = $\sqrt{8}$ cm

Find two numbers whose product is 8.

8 , 1 are the numbers. $(8 \times 1 = 8)$

Draw line AB of length 8 + 1 = 9 cm and do the construction as per the steps given under construction 4 (Q2) .



Q3) Draw a square of area 24 cm^2 .

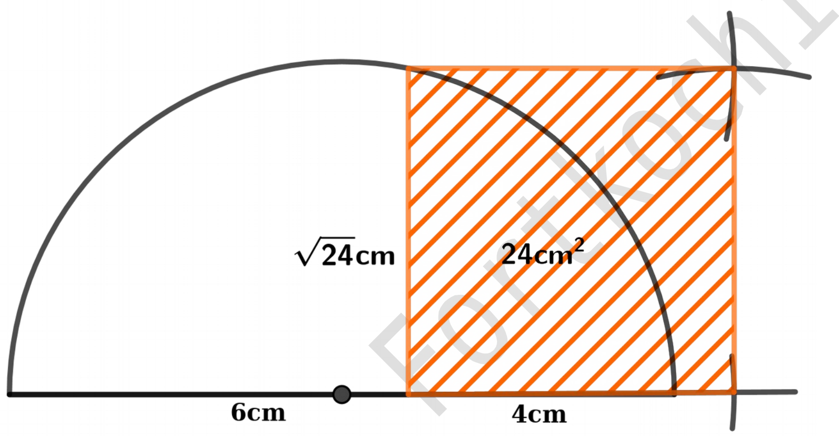
Ans) Given , area of square = 24cm^2

∴ side of square = $\sqrt{24}$ cm

Find two numbers whose product is 24.

Let us take 6 & 4 $(6 \times 4 = 24)$

Draw line AB of length 6 + 4 = 10 cm and do the construction as per the steps given under construction 4 (Q2) .



Q) Draw an equilateral triangle of side $\sqrt{12}$ cm .

Ans) Find two numbers whose product is 12.

Let us take 6 & 2 $(6 \times 2 = 12)$

1 . Draw line AB of length 6 + 2 = 8 cm.

2 . Mark the mid point.

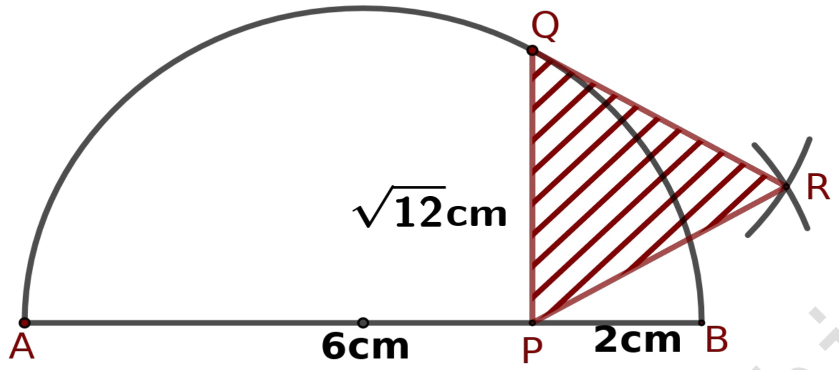
3 . Draw a circle with AB as diameter.

4 . Mark the point P on AB such that AP = 6 cm and PB = 2 cm.

5 . Through P draw line PQ perpendicular to AB. now PQ = $\sqrt{12}$ cm

6 . Measure PQ on the compass, using this measurement draw arcs with P & Q as centres to intersect at R.

7 . Complete triangle PQR

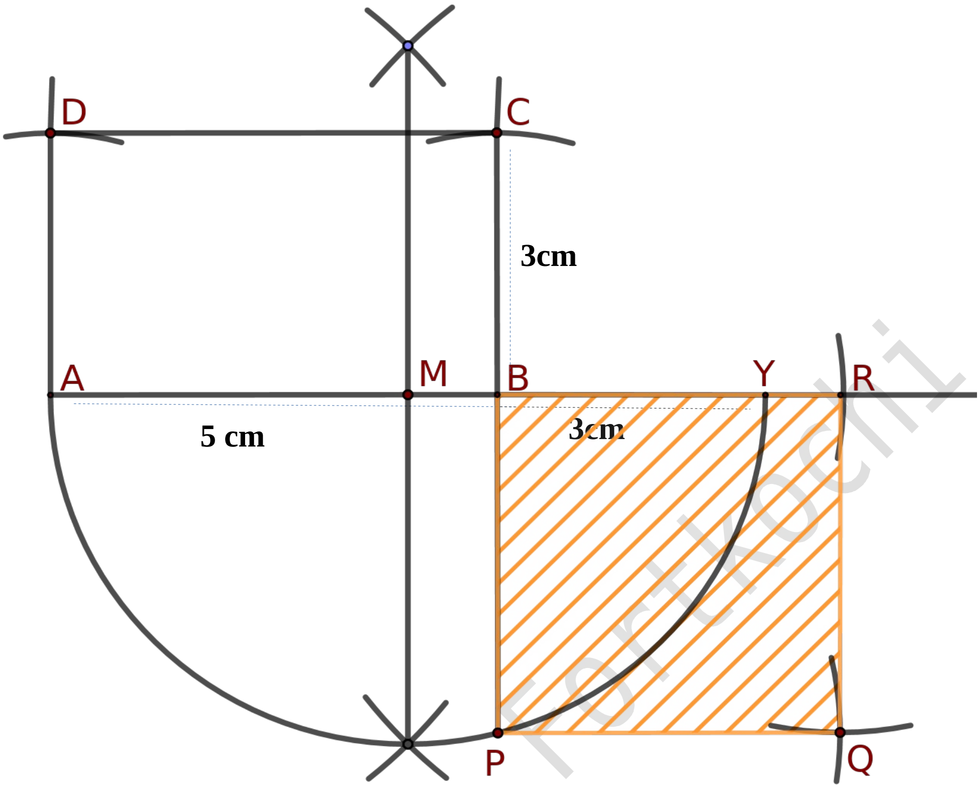


Construction 5

Q) Draw a rectangle of width 5 centimetres and height 3 centimetres and draw a square of the same area.

Ans) Steps:

1. Draw a rectangle of width 5 cm and height 3 cm .
2. Let the name of the rectangle be ABCD .
3. Extend AB to Y such that BY = 3cm.
4. Draw the perpendicular bisector of AY.
5. Mark the midpoint of AY as M .
6. Now draw a semicircle below ,with AY as diameter. Extend the side CB of the rectangle downwards to meet the semi circle at P. This line BP is the side of the required square.
7. Extend line BY, measure BP on the compass, using this measurement with B as centre draw an arc on this extended line and mark the point R.
8. With the same measurement draw arcs by keeping the compass at P & R . Let these arcs meet at Q. Complete the square BPQR .

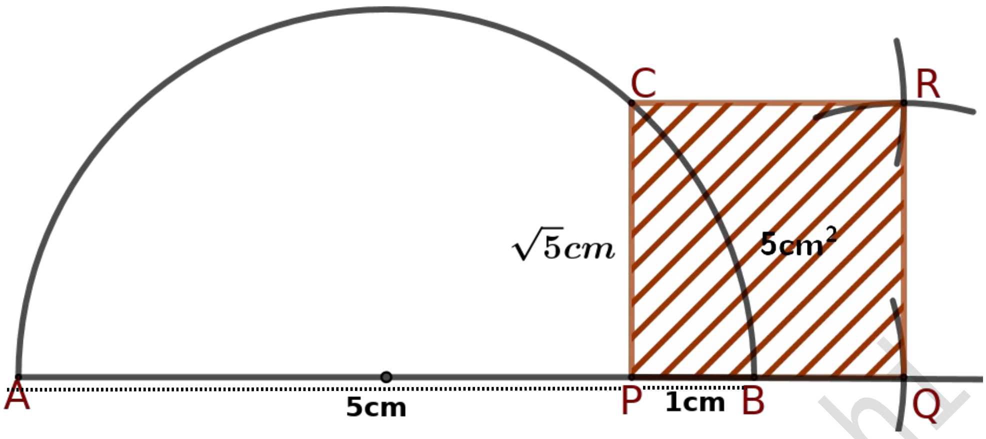


Q) Draw a square of area 5 square centimetres in three different ways.
(Recall Pythagoras theorem)

Ans)

Method 1 (Using PA × PB = PC^2)

Area of square = 5 cm^2 ∴ Side of square = $\sqrt{5}$ cm
Find two numbers whose product is 5.
5 , 1 are the numbers.
Draw line AB of length 5 + 1 = 6 cm and do the construction as per the steps given under construction 4 (Q2)



Method 2 (Using Pythagoras Theorem)

In a right triangle ,

(Hypotenuse)^2 = (Base)^2 + (Altitude)^2

If base = 2cm & Altitude = 1cm, then

(Hypotenuse)^2 = (2)^2 + (1)^2

(Hypotenuse)^2 = 4 + 1 = 5

Hypotenuse = $\sqrt{5}$

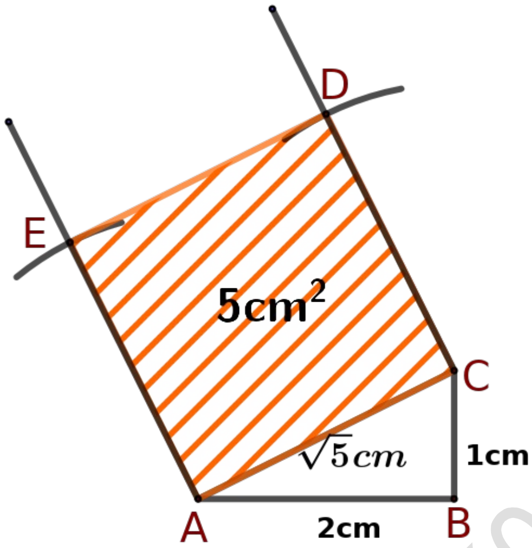
1. **Draw line AB of length 2 cm.**
2. **Draw a line perpendicular to AB at B, mark BC = 1cm**
3. **Join AC, now AC = $\sqrt{5}$ cm .**

   By Pythagoras Theorem

   AC = $\sqrt{2^2+1^2}$ = $\sqrt{4+1}$ = $\sqrt{5}$

4. **Draw perpendiculars at A & C, measure AC on the compass, with this measurement draw arcs on these perpendiculars and mark the points D & E .**

5. **Complete the square ACDE .**
   Area of square ACDE = 5 cm^2 .



Method 3 (Using Pythagoras Theorem)

In a right triangle ,

$(\text{Hypotenuse})^2 = (\text{Base})^2 + (\text{Altitude})^2$

so, $(\text{Altitude})^2 = (\text{Hypotenuse})^2 - (\text{Base})^2$

If base = 2cm & hypotenuse = 3cm , then

$(\text{Altitude})^2 = (3)^2 - (2)^2$

$= 9 - 4$

$= 5$

Altitude $= \sqrt{5}$

1. Draw line AB of length 2 cm.
2. Draw a perpendicular at B.
3. Measure 3 cm on the compass, with A as centre draw an arc on this perpendicular and mark point C.
   Now BC = $\sqrt{5}$ cm .

4. Draw perpendiculars at B & C, measure BC on the compass, draw arcs on these perpendiculars with this

measurement and mark the points E &D .

5. Complete the square BCDE .

Area of square BCDE = 5 cm^2 .