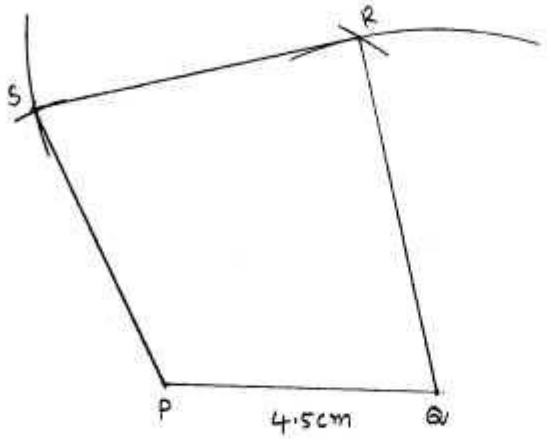
Constructions of Quadrilaterals

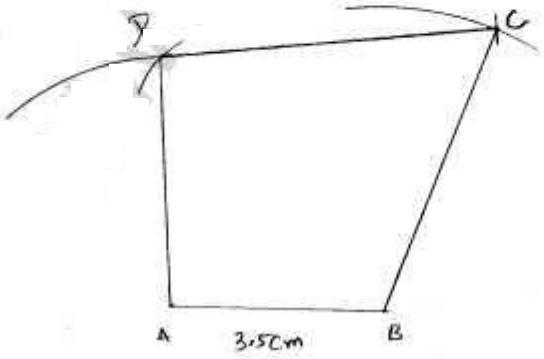
Exercise 14.1

1.



1. Draw PQ = 4.5cm
2. From Q draw arc of length 6cm
3. From P draw arc of length 6.5cm, Intersection point is 'R'
4. From R draw arc of length 5.5cm
5. From P draw arc of length 5cm, Intersection point is 'S'.
6. Join $\overline{QR}$, $\overline{SR}$, $\overline{PS}$, Required quadrilateral PQRS formed.

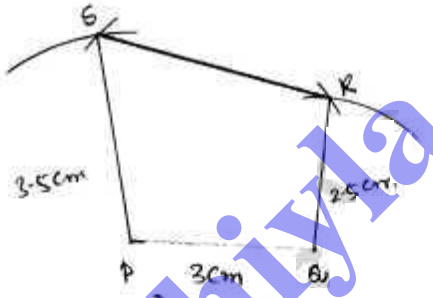
2.



Steps:

1. Draw AB = 3.5cm
2. From 'A' draw Arc AD = 5cm
3. From 'B' draw Arc BD = 5.4cm, Intersection point is 'D'
4. From 'B' draw Arc BC = 5cm.
5. From 'D' draw Arc DC = 5.6cm, Intersection point is 'C'
6. Join $\overline{AD}$, $\overline{DC}$, $\overline{BC}$, The required quadrilateral ABCD is formed.

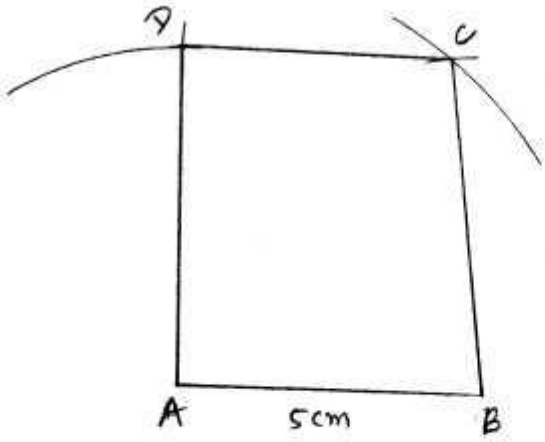
3.



Steps

1. Draw PQ = 3cm line
2. Draw Arc
2. From Q, Draw Arc QR = 2.5cm
3. From P, Draw Arc PR = 4cm, Intersection point is 'R'
4. From Q, Draw Arc QS = 5cm
5. From P, Draw Arc PS = 3.5cm, Intersection Point is 'S'
6. Join $\overline{QR}$, $\overline{PS}$, $\overline{SR}$, Now required quadrilateral is formed.

4.



Steps

1) Draw AB = 5cm line

2) From 'A' draw Arc AC = 7cm

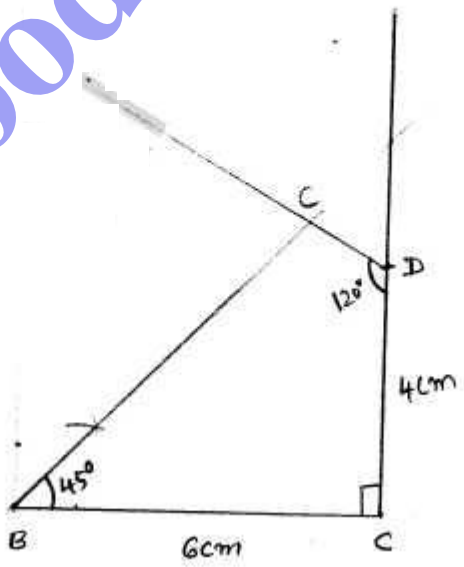
3) From 'B' draw Arc BC = 5.5cm, Intersection point 'C'

4) From 'A' draw Arc AD = 5.5cm

5) From 'C' draw Arc CD = 4.5cm, Intersection point 'D'

6) Join $\overline{BC}$, $\overline{DC}$, $\overline{AD}$, Now required quadrilateral ABCD formed.

5.



Steps

1) Draw $BC = 6cm$ line

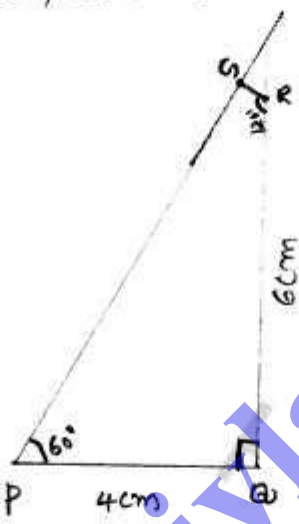
2) At 'C' Draw $\angle S = 90$ line upto $\overline{DC} = 4cm$. mark point 'D'.

3) From 'B' Draw $\angle B = 45°$ line

4) From 'D' Draw $\angle D = 120°$ line, Intersection point is 'A'

5) Join $\overline{BA}$, $\overline{CD}$, Now required quadrilateral ABCD formed.

6.



Steps

1. Draw $PQ = 4cm$ line

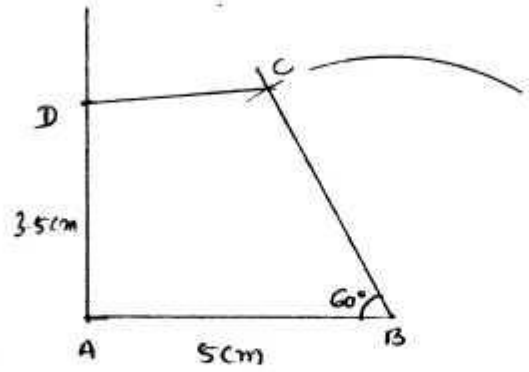
2. Draw $\angle Q = 90°$ line up $\overline{QR} = 6cm$. and mark 'R'.

3. Draw $\angle P = 60°$ line

4. Draw $\angle R = 120°$ line, Intersection point is 'S',

5. Join $\overline{PS}$, $\overline{SR}$, Now required quadrilateral PQRS formed.

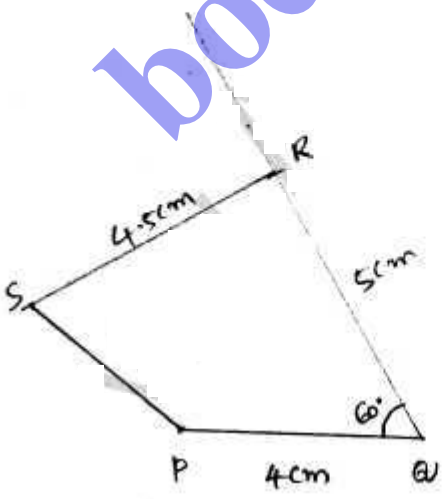
7.



Steps

1. Draw AB = 5cm line
2. Draw $\angle B = 60°$ line from 'B'
3. Draw A cut $\angle B = 60°$ line with arc of BC = 4.2cm, mark point 'C'
4. At 'A' Draw $\angle A = 90°$ and at a distance of AD = 3.5cm. mark 'D'.
5. Join DC, Now required quadrilateral ABCD is formed.

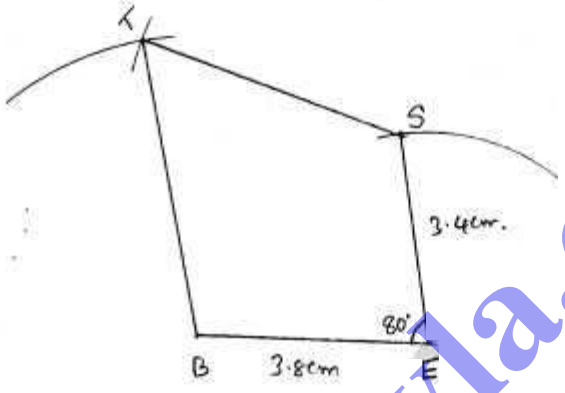
8.



Steps

1. Draw PQ = 4cm line
2. Draw ∠Q = 60° line and at Q from Q, Draw arc of QR = 5 cm
   Intersection point as 'R'.
3. Draw ∠R = 90° line up to a distance of RS = 4.5cm mark 'S'
4. Now join PS. Now required quadrilateral PQRS formed.

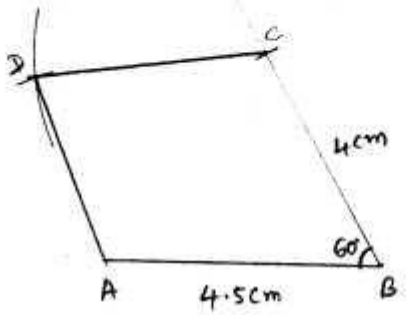
9.



Steps

1. Draw BE = 3.8 cm line
2. Draw ∠E = 80°, and an arc ES = 3.4cm and both cut at a point 'S'.
3. Draw ST = 4.5cm Arc from 'S'
4. Drew BT = 5cm Arc from 'B' and intersection point 'T'.
5. Now join BT, TS, as required quadrilateral BEST formed.

10.

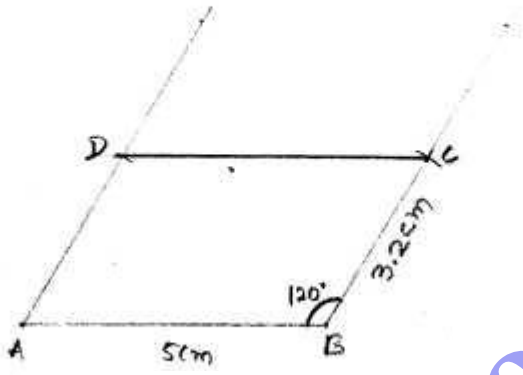


Steps:

1. Draw AB = 4.5cm line
2. Draw $\angle B = 60^\circ$ line from 'B' and draw an arc BC = 4cm from 'B'. Intersection point is 'C'
3. Draw arc of DC = 3.9cm from 'C'
4. Draw arc AD = 3.2cm from 'A', Intersection point 'D'.
5. Join $\overline{CD}$, $\overline{AD}$, Now required quadrilateral ABCD formed.

Exercise 14.2

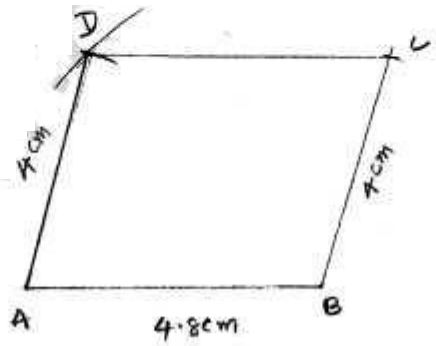
1.



Steps

1. Draw AB = 5cm
2. Draw ∠B = 120° line and cut it at $\overline{BC}$ = 3.2cm, mark point 'C'
3. Draw ∠A = (180° − 120°) = 60° at cut it at $\overline{AD}$ = 3.2cm, mark point 'D'
4. Now join $\overline{DC}$, required quadrilateral ABCD formed.

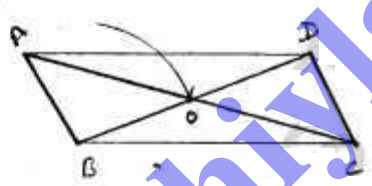
2.



Steps

1. Draw $\overline{AB}$ = 4.8cm line
2. Draw BC = 4cm Arc from 'B'
3. Draw AD = BC = 4cm Arc from A
4. Draw BD = 5.4cm arc from B, intersection point as 'D'.
5. Join $\overline{AD}$ and draw BC line parallel to AD. intersection point as 'C'.
6. join $\overline{DC}$, $\overline{BC}$, Now required quadrilateral is formed.

3.



Steps

1. Draw BC = 4.5cm

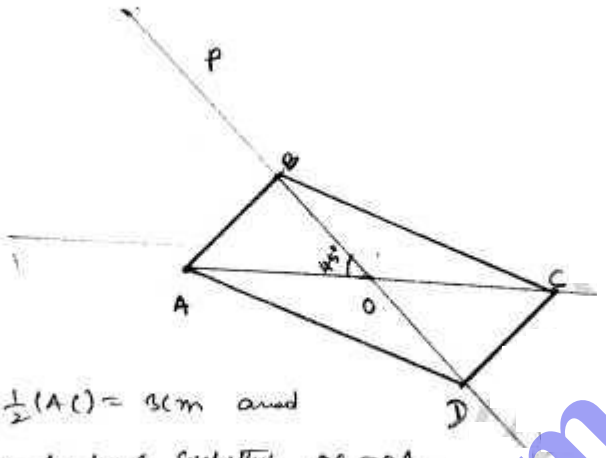
$BO = \frac{1}{2}(BD) = \frac{1}{2}(4) = 2cm$

$CO = \frac{1}{2}(AC) = \frac{1}{2}(5.6) = 2.8cm$

'O' is formed.

2. Extend BO Such that BD = 4cm
3. Extend CO Such that AC = 5.6cm
4. Now required parallelogram ABCD is formed.

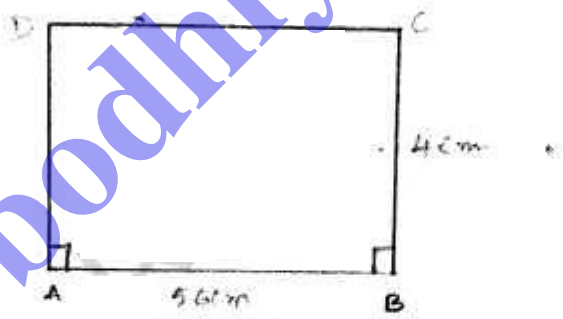
4.



Steps

1. Draw $AO = \frac{1}{2}(AC) = 3cm$ and produce AO to C such that $OC = OA$
2. At O construct $\angle AOB = 45°$
3. From OP, Cut $OB = 2.5cm$. Produce OB to D such that $OB = OD$.
4. Join $\overline{AD}$, $\overline{AB}$, $\overline{BC}$, $\overline{CD}$, ABCD parallelogram formed.

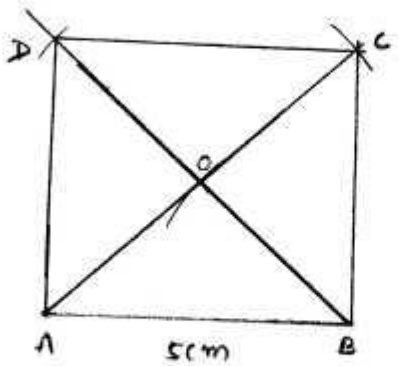
5.



Steps

1. Draw $AB = 5.6cm$
2. Draw $\angle B = 90°$ & $BC = 4cm$
3. Draw $\angle A = 90°$ & $AD = BC = 4cm$.
4. Join $\overline{DC}$, now rectangle ABCD is formed.

6.



1. Draw $AB = 5cm$

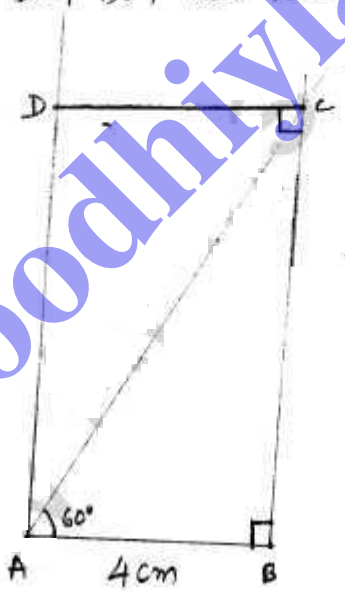
   Draw $AO = BO = 3.4cm$

2. Extend AO to C such that $AC = 6.8$ cm

   Extend BO to D such that $BD = 6.8$ cm

3. join $\overline{AD}$, $\overline{DC}$, $\overline{BC}$, now rectangle ABCD is formed.

7.

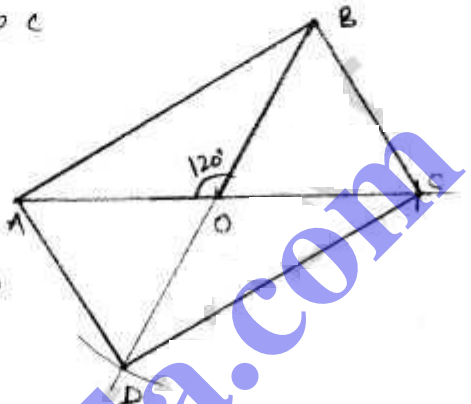


1. Draw AB = 4cm
2. Draw ∠BAC = 90 & ∠B = 90°,
3. Join $\overline{BC}$, $\overline{AD}$, Required rectangle ABCD is formed.

8.

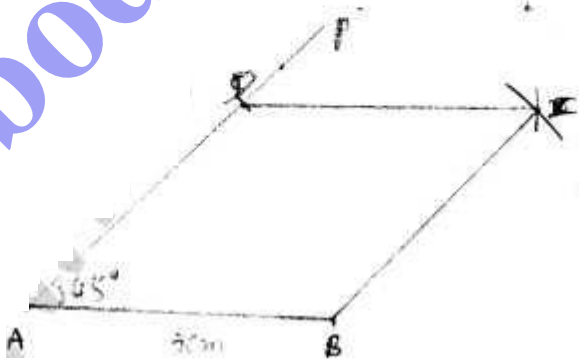
Steps:

1. AO = 3.3 cm extend to C
2. Such that AO = OB
2. ∠AOB = 120° and
   Draw BO = 3.3cm
   and extend to D such that
   BO = OD
3. Join $\overline{AB}$, $\overline{BC}$, $\overline{CD}$, $\overline{AD}$,



Now required rectangle ABCD is formed.

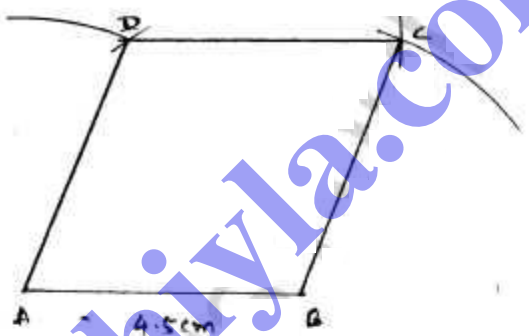
9.



Steps

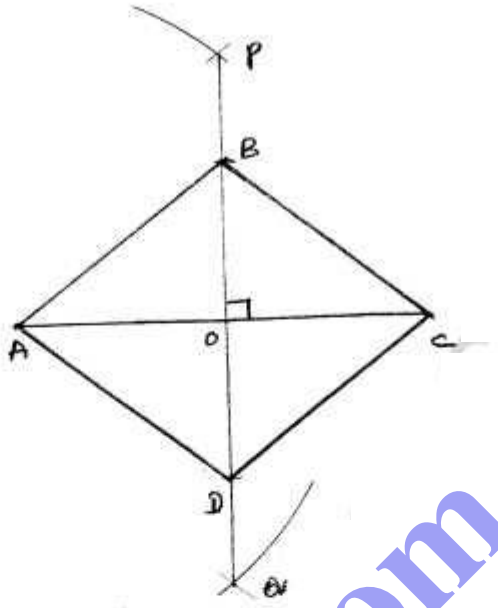
1. Draw AB = 5cm
2. At A', Construct ∠BAP = 45°
3. From AP, Cut off AD = 5cm
4. With B as centre and radius 5cm draw an arc
5. With D as centre and radius 5cm draw an arc meet previous are at C
6. Join BC and CD. Then ABCD is required rohmbus

10.



1. Draw AB = 4.5cm
2. A as centre, with 4.5cm radius draw an arc
3. B as centre, with 5cm radius draw an arc which meets previous are at 'D'.
4. With D, C as centres with 4.5cm radius draw arcs. They meet at 'C'
5. Join $\overline{AD}$, $\overline{DC}$, $\overline{BC}$, Then ABCD is required rohmbus.

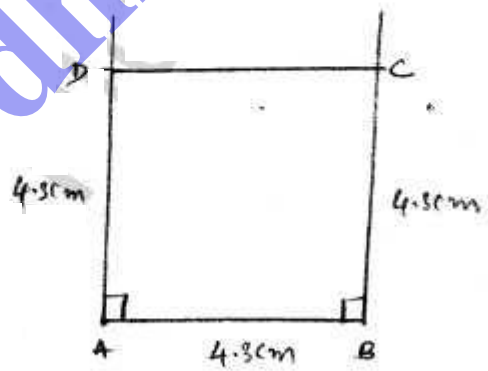
11.



Steps

1. Draw AC = 6.8cm
2. Draw PQ, which perpendicular bisector of AC
3. Cut PQ such that OB = OD = 2.6cm
4. Join $\overline{AB}$, $\overline{BC}$, $\overline{CD}$, $\overline{AD}$, now ABCD is required rhombus.

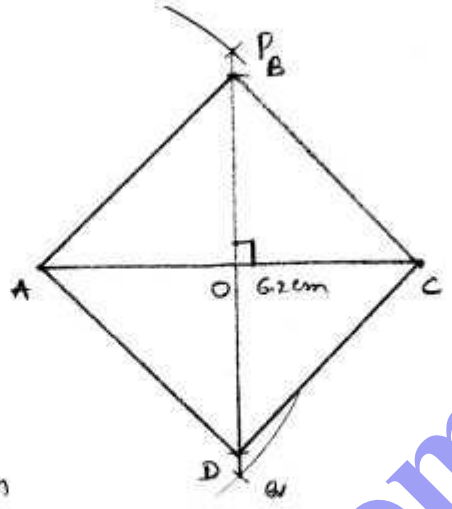
12.



Steps

1. Draw AB = 4.3cm
2. $\angle A = 90°$, A' as centre, 4.3cm radius draw an arc, both meet at D'
3. Repeat the same at B', C' is formed
4. Join AD, DC, BC, now ABCD is required square.

13.



Steps

1. Draw AC = 6.2cm
2. Draw PQ, which is perpendicular bisector of AC
3. Cut PQ, from 'O' both sides such that OB = OD = 3.1cm. B, D are formed.
4. join AB, BC, CD, AD, then ABCD is required square.