Chapter : 17. CONSTRUCTION OF QUADRILATERALS

Exercise : 17A

Question: 1

Construct a

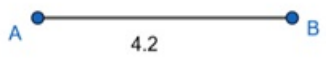
Solution:

Given :

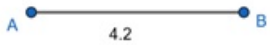
AB = 4.2 cm , BC = 6 cm , CD = 5.2 cm , DA = 5 cm , AC = 8 cm ,

Construction :

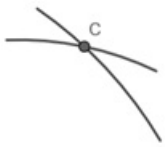
Step 1 : Draw segment AB of length 4.2 cm.

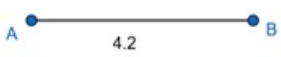


Step 2 : Taking A as centre draw an arc of radius 8 cm.

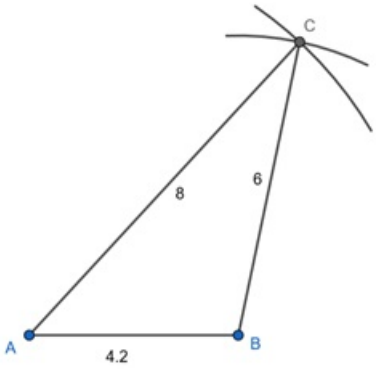


Step 3 : Taking B as centre draw an arc of radius 6 cm, which cuts the arc drawn in step 2. Point of intersection of two arcs is C.

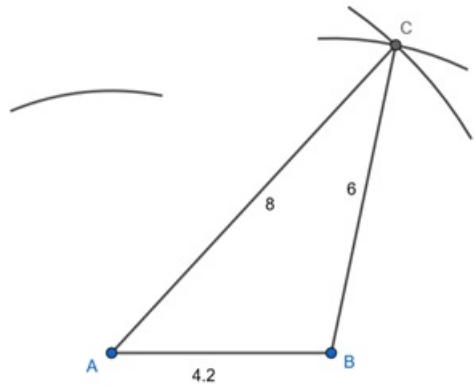




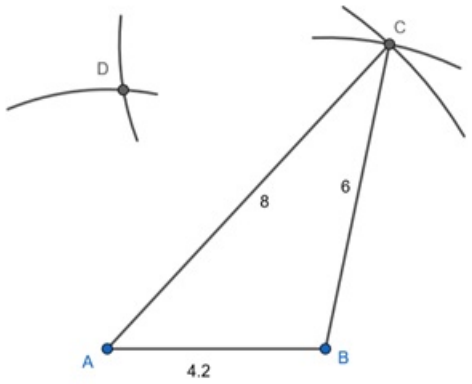
Step 4 : Join AC and BC.



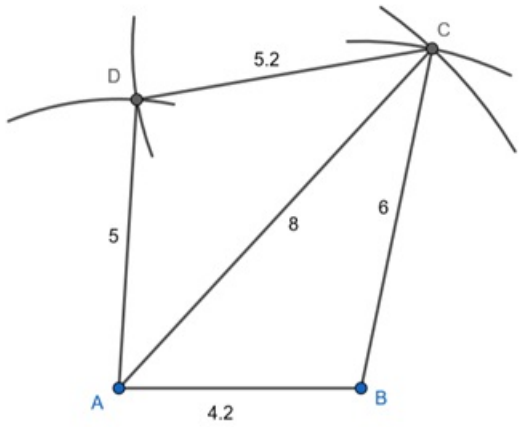
Step 5 : Taking A as centre draw an arc of radius 5 cm.



Step 6 : Taking C as centre draw an arc of radius 5.2 cm, which cuts the arc drawn in step 5. Point of intersection of two arcs is D.



Step 7 : Join AD and CD.



ABCD is the required quadrilateral.

Question: 2

Construct a

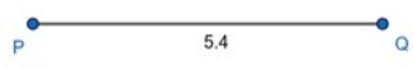
Solution:

Given :

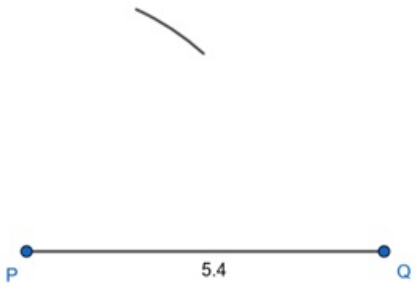
PQ = 5.4 cm , QR = 4.6 cm , RS = 4.3 cm , SP = 3.5 cm , PR = 4 cm.

Construction :

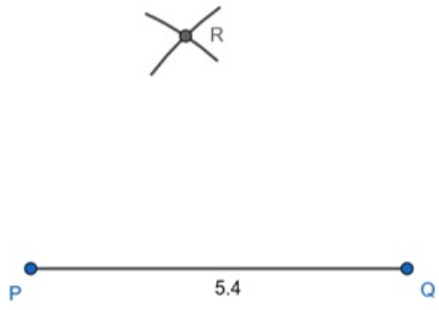
Step 1 : Draw segment PQ of length 5.4 cm.



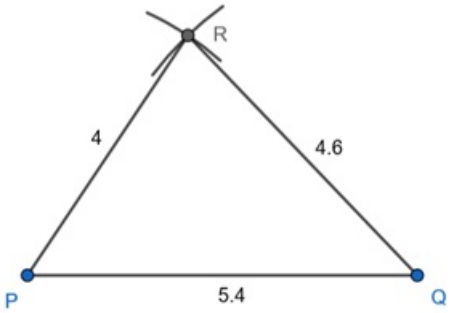
Step 2 : Taking P as centre draw an arc of radius 4 cm.



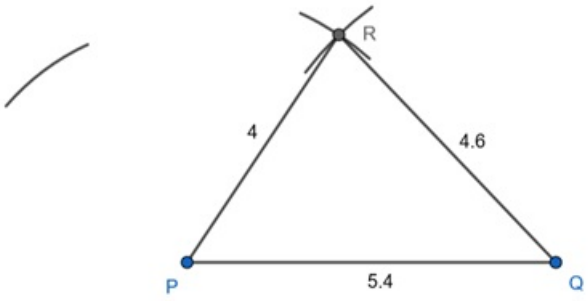
Step 3 : Taking Q as centre draw an arc of radius 4.6 cm, which cuts the arc drawn in step 2. Point of intersection of two arcs is R.



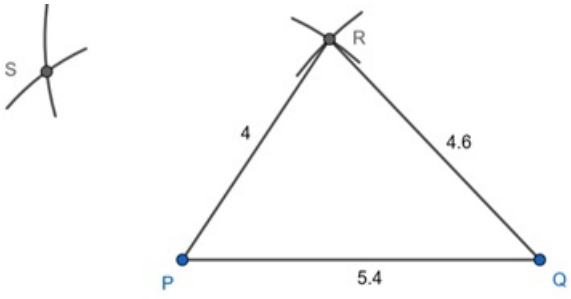
Step 4 : Join PR and QR.



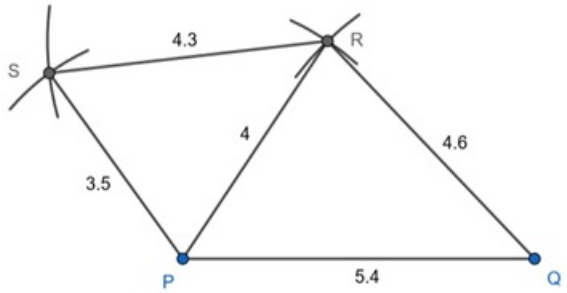
Step 5 : Taking P as centre draw an arc of radius 3.5 cm.



Step 6 : Taking R as centre draw an arc of radius 4.3 cm, which cuts the arc drawn in step 5. Point of intersection of two arcs is S.



Step 7 : Join PS and RS.



PQRS is the required quadrilateral.

Question: 3

Construct a

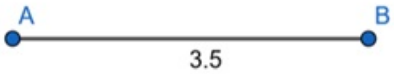
Solution:

Given :

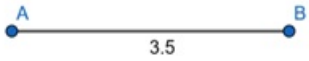
AB = 3.5 cm , BC = 3.58 cm , CD = DA = 4.5 cm , BD = 5.6 cm.

Construction :

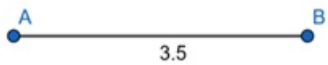
Step 1 : Draw segment AB of length 3.5 cm.



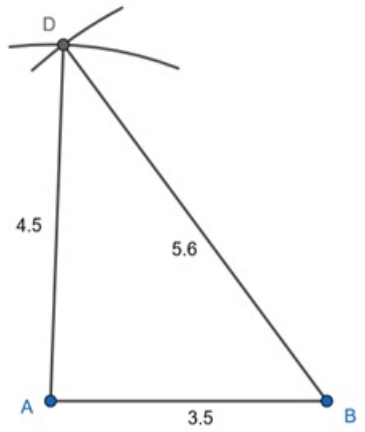
Step 2 : Taking A as centre draw an arc of radius 4.5 cm.



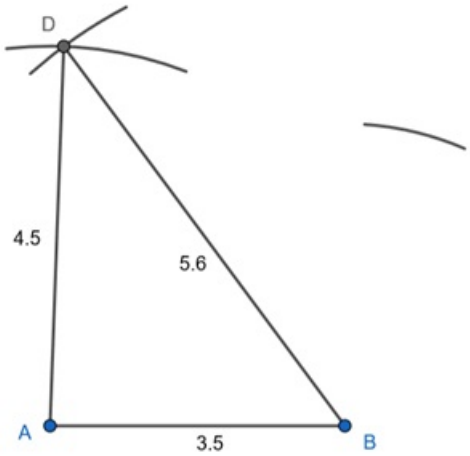
Step 3 : Taking B as centre draw an arc of radius 5.6 cm, which cuts the arc drawn in step 2. Point of intersection of two arcs is D.



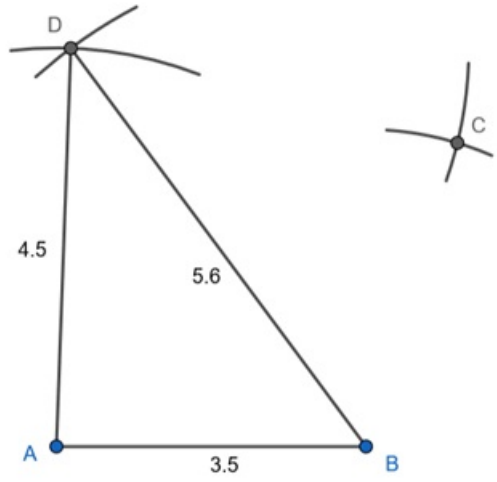
Step 4 : Join AD and BD.



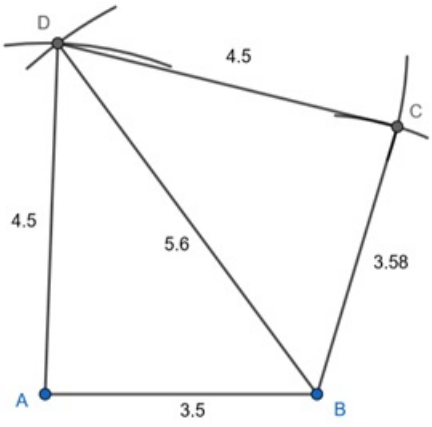
Step 5 : Taking B as centre draw an arc of radius 3.58 cm.



Step 6 : Taking D as centre draw arc of radius 4.5 cm, which cuts the arc drawn in step 5. Point of intersection of two arcs is C.



Step 7 : Join BC and CD.



ABCD is the required quadrilateral.

Question: 4

Construct a

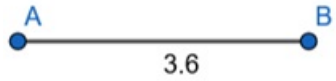
Solution:

Given :

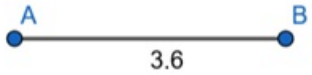
AB = 3.6 cm , BC = 3.3 cm , AD = 2.7 cm , AC = 4.6 cm , BD = 4 cm.

Construction :

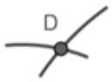
Step 1 : Draw segment AB of length 3.6 cm.

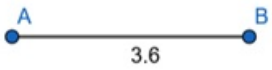


Step 2 : Taking A as centre draw an arc of radius 2.7 cm.

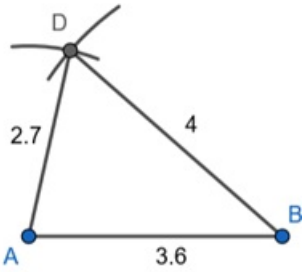


Step 3 : Taking B as centre draw an arc of radius 4 cm, which cuts the arc drawn in step 2. Point of intersection of two arcs is D.

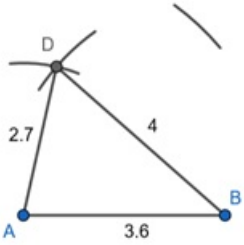




Step 4 : Join AD and BD.

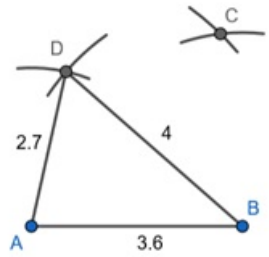


Step 5 : Taking A as centre draw an arc of radius 4.6 cm.

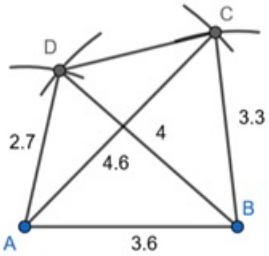


Step 6 : Taking B as centre draw an arc of radius 3.3 cm, which cuts the arc drawn in step 5.

Point of intersection of two arcs is C.



Step 7 : Join BC , AC and CD.



ABCD is the required quadrilateral.

Question: 5

Construct a

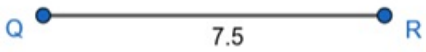
Solution:

Given :

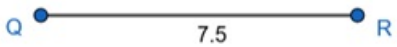
QR = 7.5 cm , PR = PS = 6 cm , RS = 5 cm , QS = 10 cm.

Construction :

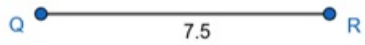
Step 1 : Draw segment QR of length 7.5 cm.



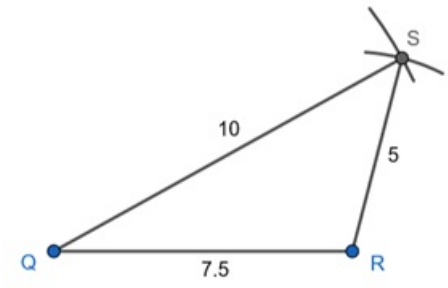
Step 2 : Taking Q as centre draw an arc of radius 10 cm.



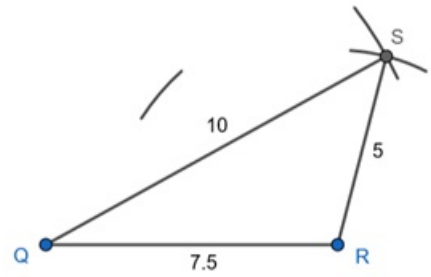
Step 3 : Taking R as centre draw an arc of radius 5 cm, which cuts the arc drawn in step 2. Point of intersection of two arcs is S.



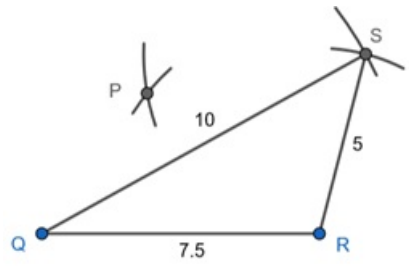
Step 4 : Join QS and SR.



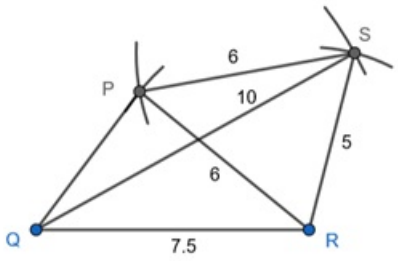
Step 5 : Taking R as centre draw an arc of radius 6 cm.



Step 6 : Taking S as centre draw an arc of radius 6 cm, which cuts the arc drawn in step 5. Point of intersection of two arcs is P.

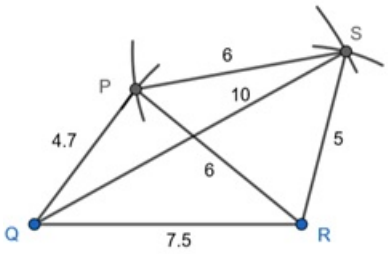


Step 7 : Join PQ , PR and PS.



PQRS is the required quadrilateral.

Step 8 : Measure length of PQ .



Length of fourth side PQ = 4.7 cm.

Question: 6

Construct a

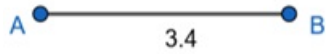
Solution:

Given :

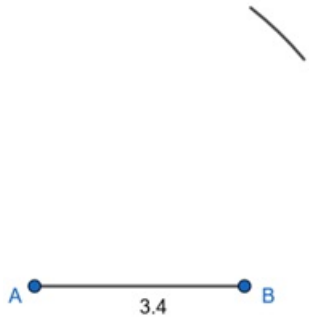
AB = 3.4 cm , CD = 3 cm , DA = 5.7 cm , AC = 8 cm , BD = 4 cm.

Construction :

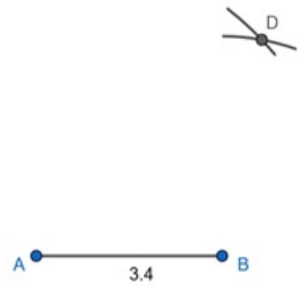
Step 1 : Draw segment AB of length 3.4 cm.



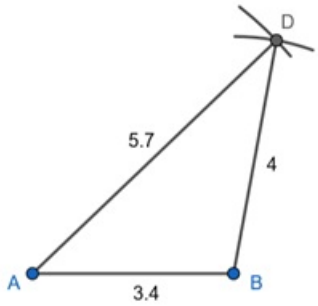
Step 2 : Taking A as centre draw an arc of radius 5.7 cm.



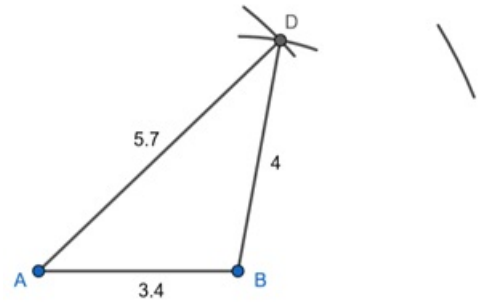
Step 3 : Taking B as centre draw an arc of radius 4 cm, which cuts the arc drawn in step 2. Point of intersection of two arcs is D.



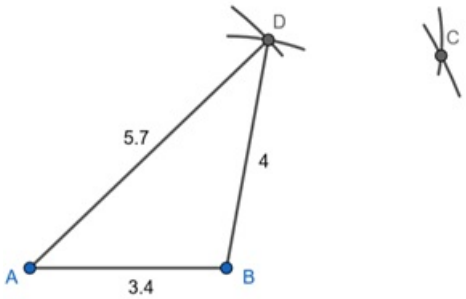
Step 4 : Join AD and BD.



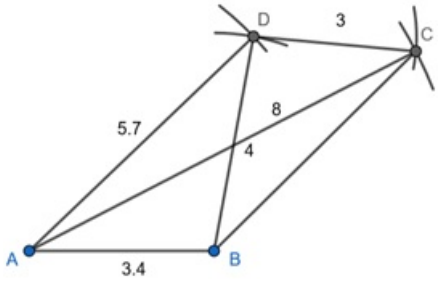
Step 5 : Taking A as centre draw an arc of radius 8 cm.



Step 6 : Taking D as centre draw arc of radius 3 cm, which cuts the arc drawn in step 5. Point of intersection of two arcs is C.



Step 7 : Join CD , AC and BC.



ABCD is the required quadrilateral.

Question: 7

Construct a

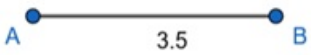
Solution:

Given :

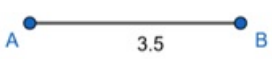
AB = BD = 3.5 cm , AD = CD = 5.2 cm , $\angle ABC = 120°$

Construction :

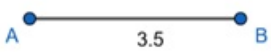
Step 1 : Draw segment AB of length 3.5 cm.



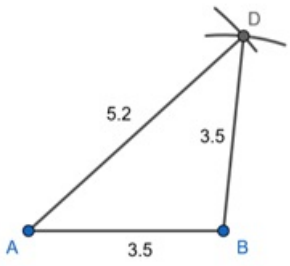
Step 2 : Taking A as centre draw an arc of radius 5.2 cm.



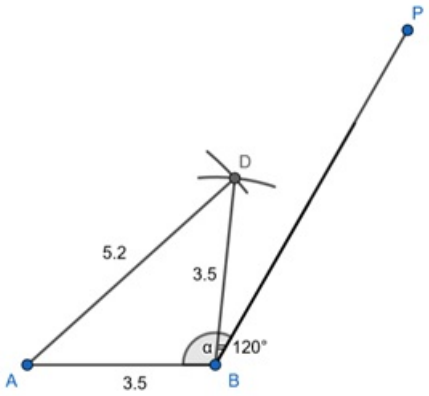
Step 3 : Taking B as centre draw an arc of radius 3.5 cm, which cuts the arc drawn in step 2. Point of intersection of two arcs is D.



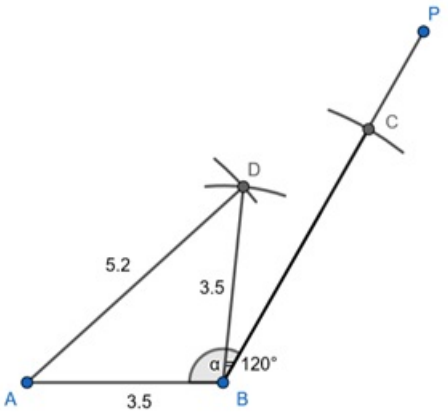
Step 4 : Join AD and BD.



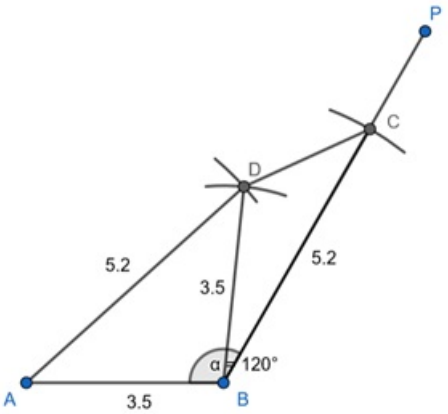
Step 5 : Draw angle ABC of 120 degrees.



Step 6 : Taking B as centre draw an arc of radius 5.2 cm, which cuts the segment BP. Point of intersection is C.



Step 7 : Join CD



ABCD is the required quadrilateral.

Question: 8

Construct a

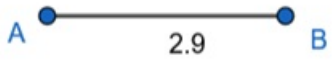
Solution:

Given :

AB = 2.9 cm , AC = 3.2 cm , CD = 2.7 cm , DA = 3.4 cm , $\angle A = 70°$

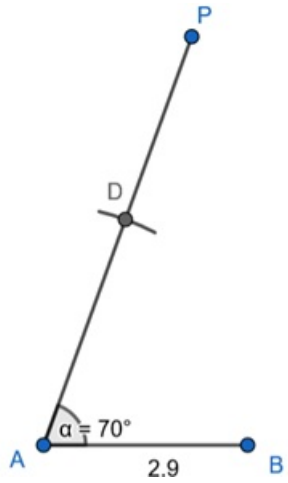
Construction :

Step 1 : Draw segment AB of length 2.9 cm.

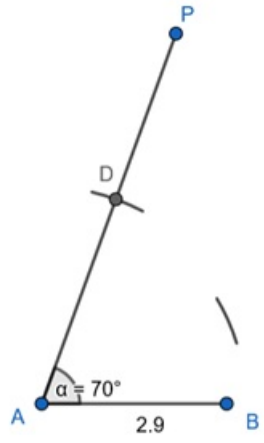


Step 2 : Draw angle A of 70 degrees.

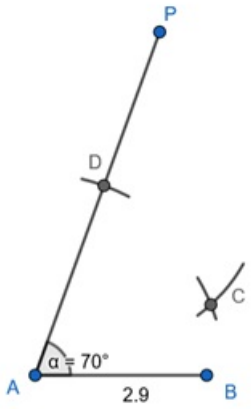
Step 3 : Taking A as centre draw an arc of radius 3.4 cm, which cuts the segment BP. Point of intersection is D.



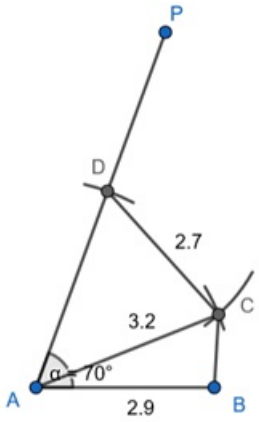
Step 4 : Taking A as centre draw an arc of radius 3.2 cm.



Step 5 : Taking D as centre draw arc of radius 2.7 cm, which cuts the arc drawn in step 4. Point of intersection is C.



Step 6 : Join CD, AC and BC.



ABCD is the required quadrilateral.

Question: 9

Construct a

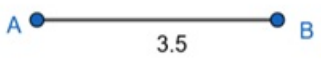
Solution:

Given :

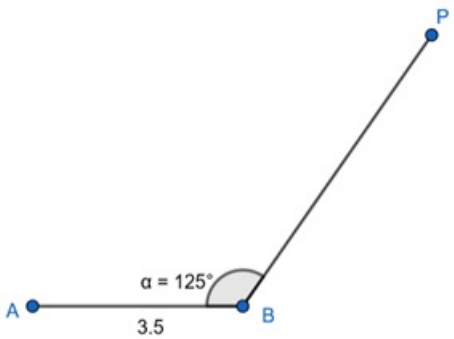
AB = 3.5 cm , BC = 5 cm , CD = 4.6 cm , $\angle B = 125°$, $\angle C = 60°$

Construction :

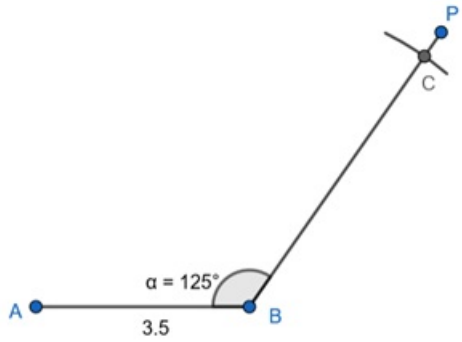
Step 1 : Draw segment AB of length 3.5 cm.



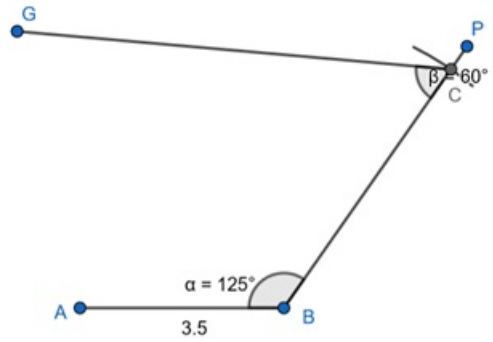
Step 2 : Draw angle B of 125 degrees.



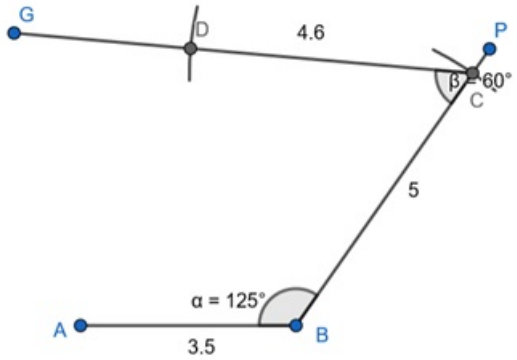
Step 3 : Taking B as centre draw arc of radius 5 cm which cuts the segment BP. Point of intersection is C.



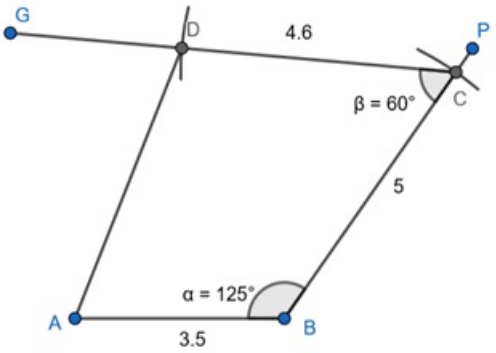
Step 4 : Draw angle C of 60 degrees.



Step 5 : Taking C as centre draw arc of radius 4.6 cm which cuts the segment CG. Point of intersection is D.



Step 6 : Join AD.



ABCD is the required quadrilateral.

Question: 10

Construct a

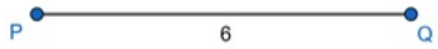
Solution:

Given :

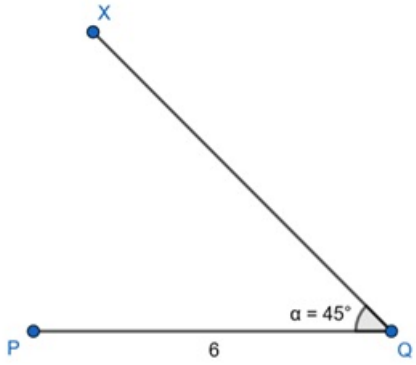
PQ = 6 cm , QR = 5.6 cm , RS = 2.7 cm , $\angle Q = 45°$, $\angle R = 90°$

Construction :

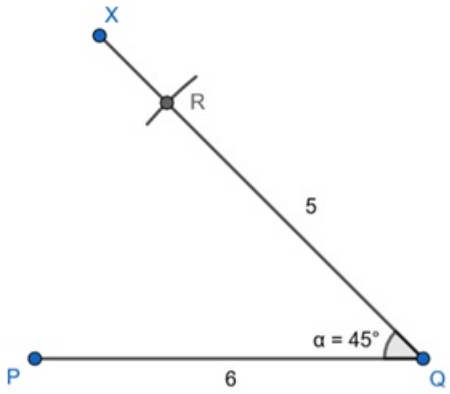
Step 1 : Draw segment PQ of length 6 cm.



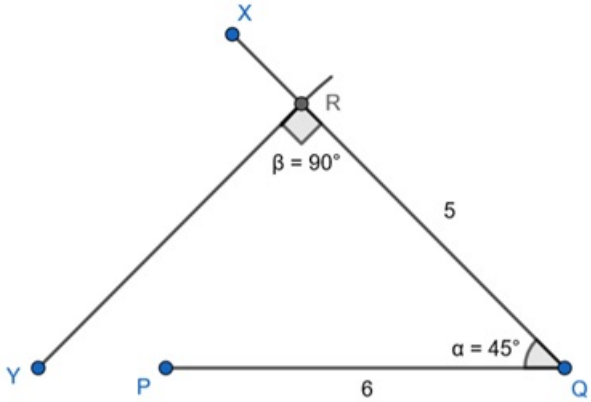
Step 2 : Draw angle Q of 45 degrees.



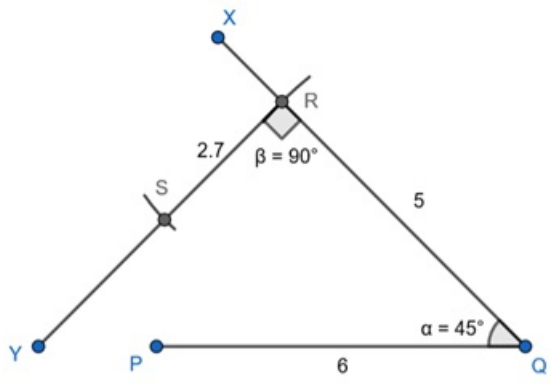
Step 3 : Taking Q as centre draw arc of radius 5.6 cm which cuts the segment BX. Point of intersection is R.



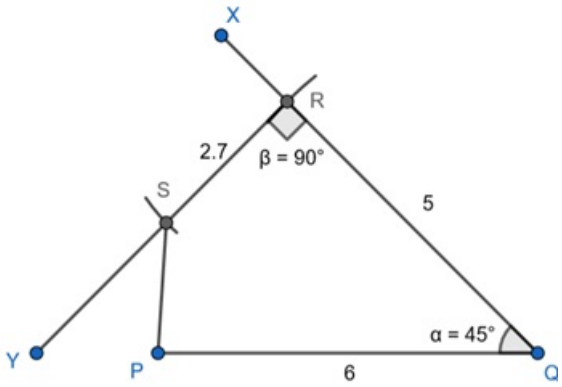
Step 4 : Draw angle R of 90 degrees.



Step 5 : Taking R as centre draw arc of radius 2.7 cm which cuts the segment RY. Point of intersection is S.



Step 6 : Join PS.



PQRS is the required quadrilateral.

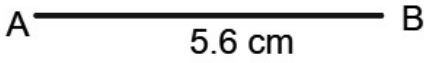
Question: 11

Construct a

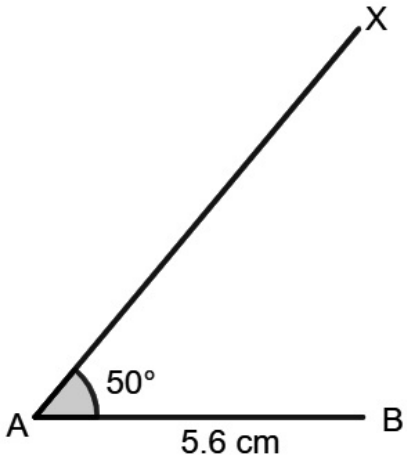
Solution:

Sum of all the angles of a quadrilateral is 360°.

∠A + ∠B + ∠C + ∠D = 360°50° + 105° + ∠C + 80° = 360°235° + ∠C = 360°∠C = 360° -

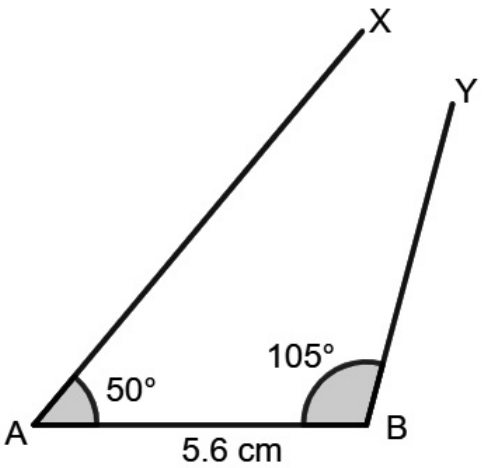
235°∠C = 125°Construction:1) Draw a line AB = 5.6 cm 

2)

At point A, Draw an ∠XAB = 50° with the help of a protector. 

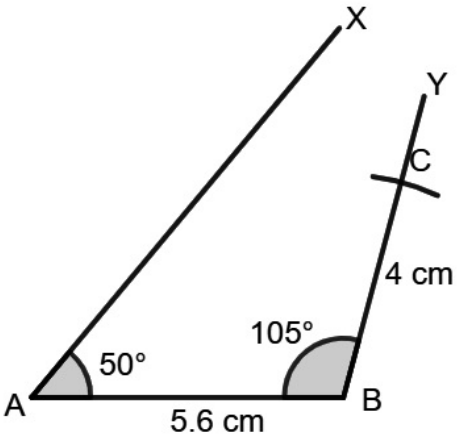
3)

At point B, Draw an ∠YBA = 105° with the help of a protector.

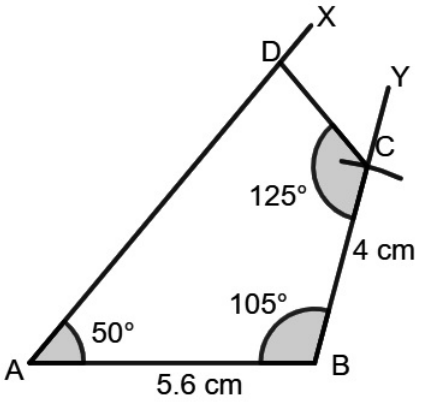


4) With B as center, draw an arc of 4 cm which intersects

the BY at C.



5) At point C, Draw ∠BCD = 125° such that D is a point on line AX.



Question: 12

Construct a

Solution:

Given :

PQ = 5 cm , QR = 6.5 cm , $\angle P = 100°$, $\angle R = 100°$, $\angle S = 75°$

Answer :

Sum of all angles of a quadrilateral is 360

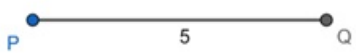
$\therefore \angle P + \angle Q + \angle R + \angle S = 360°$

$\therefore 100° + \angle Q + 100° + 75° = 360°$

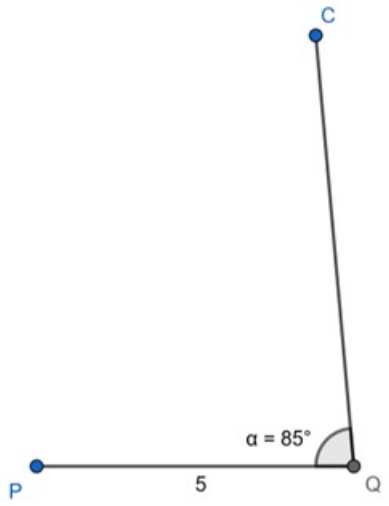
$\therefore \angle Q = 85°$

Construction :

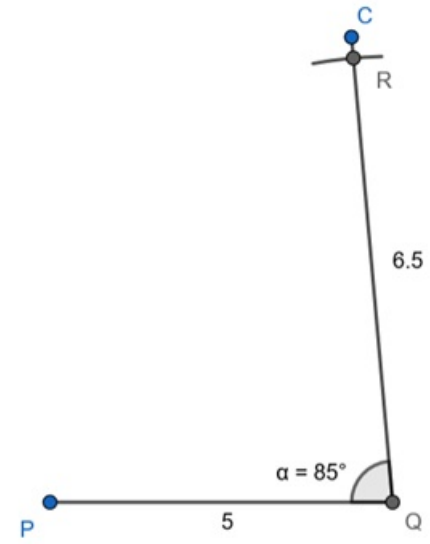
Step 1 : Draw segment PQ of length 5 cm.



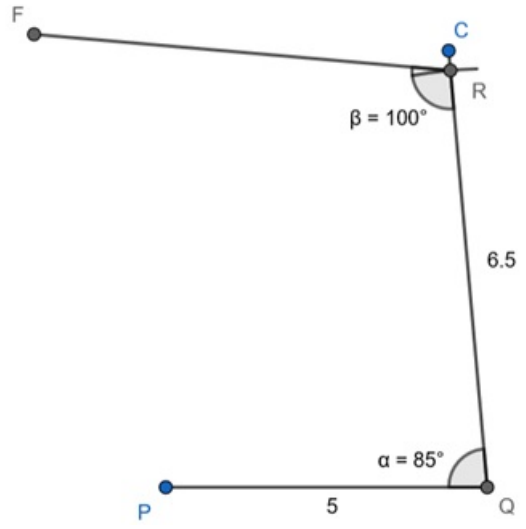
Step 2 : Draw angle PQC of 85 degrees.



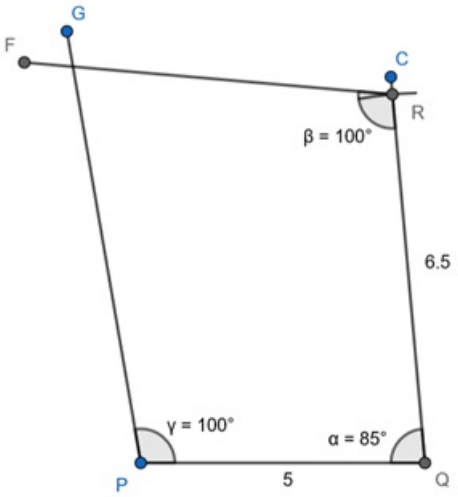
Step 3 : Taking Q as centre draw arc of radius 6.5 cm which cuts the segment QC. Point of intersection is R.



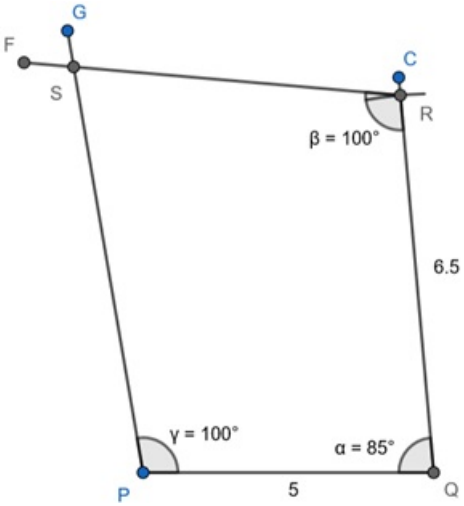
Step 4 : Draw angle QRF of 100 degrees.



Step 5 : Draw angle QPG of 100 degrees.



Step 6 : Point of intersection of segments PG and RF is S



PQRS is the required quadrilateral.

Question: 13

Construct a

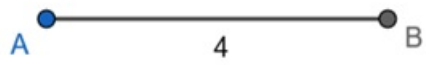
Solution:

Given :

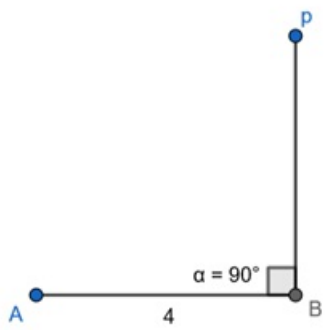
AB = 4 cm , AC = 5 cm , AC = 5.5 cm $\angle ABC = \angle ACD = 90°$.

Construction :

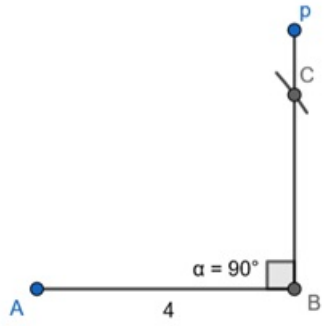
Step 1 : Draw segment AB of length 4 cm.



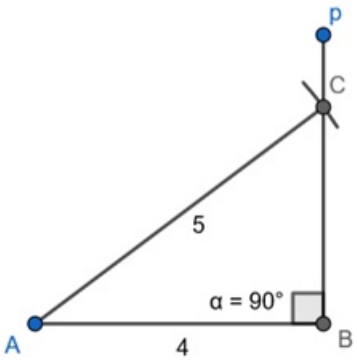
Step 2 : Draw angle ABP of 90 degrees.



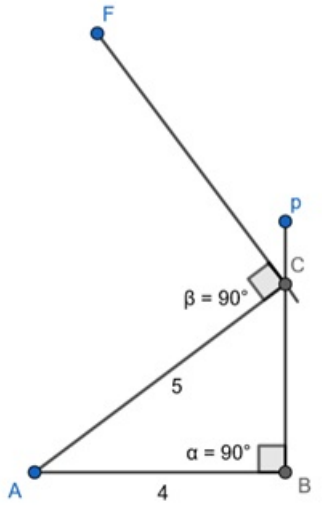
Step 3 : Taking A as centre draw arc of radius 5 cm which cuts the segment BP. Point of intersection is C.



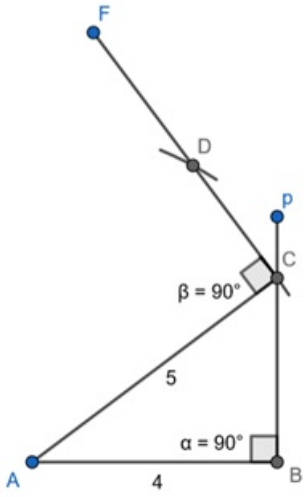
Step 4 : Join AC.



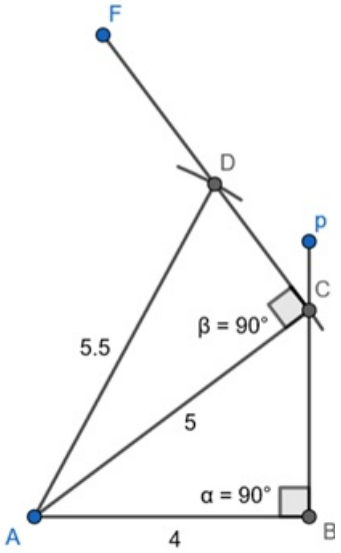
Step 5 : Draw angle ACD of 90 degrees.



Step 6 : Taking A as centre draw arc of radius 5.5 cm which cuts the segment CF. Point of intersection is D.



Step 4 : Join AD.



ABCD is the required quadrilateral.

Exercise : 17B

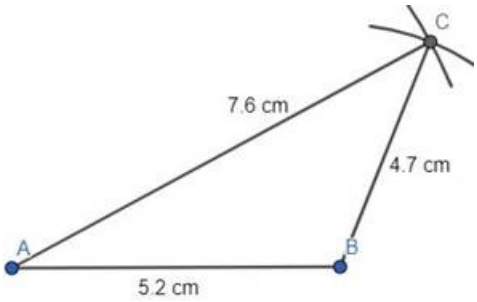
Question: 1

Construct a

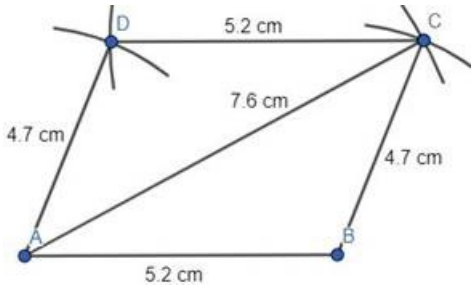
Solution:

STEP 1: At first draw a base line of 5.2 cm by scale.

STEP 2: Then from point A draw an arc of radius 7.6 cm and from point B draw an arc of radius 4.7 cm with the help of compass. The intersecting point of both the arcs is C. Join AC and BC.



STEP 3: Now from point A draw an arc of radius 4.7 cm and from point C draw an arc of radius 5.2 cm with the help of compass. The intersecting point of both the arcs is D. Join AD and CD.

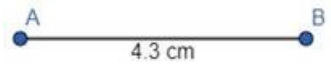


Question: 2

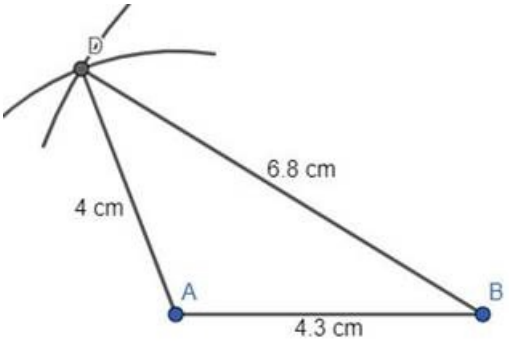
Construct a

Solution:

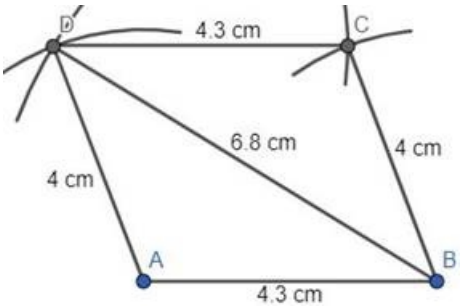
STEP 1: At first draw a base line of 4.3 cm by scale.



STEP 2: Then from point A draw an arc of radius 4 cm and from point B draw an arc of radius 6.8 cm with the help of compass. The intersecting point of both the arcs is D. Join AD and BD.



STEP 3: Now, from point D draw an arc of radius 4.3 cm and from point B draw an arc of radius 4 cm with the help of compass. The intersecting point of both the arcs is C. Join BC and DC.

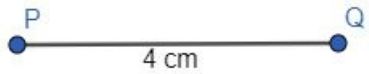


Question: 3

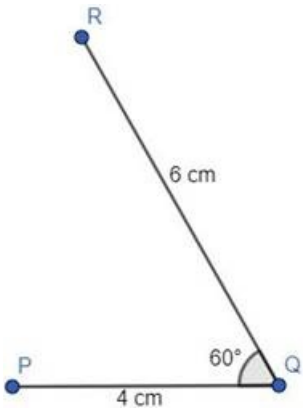
Construct a

Solution:

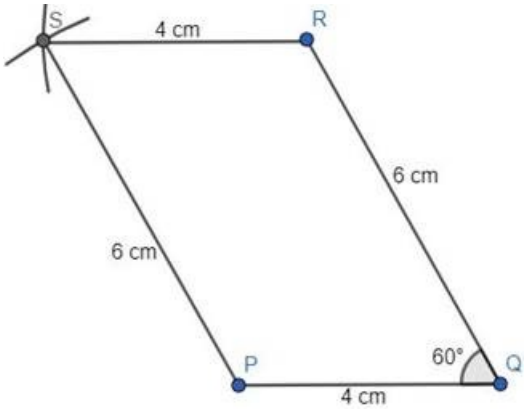
STEP 1: At first draw a base line of 4 cm by scale.



STEP 2: Then draw a 6 cm line from Q at an angle of 60^0 with the help of protractor. That point is R.



STEP 3: Now, from point P draw an arc of radius 6 cm and from point R draw an arc of radius 4 cm with the help of compass. The intersecting point of both the arcs is S. Join PS and RS.

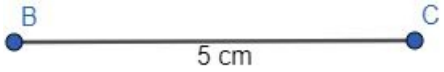


Question: 4

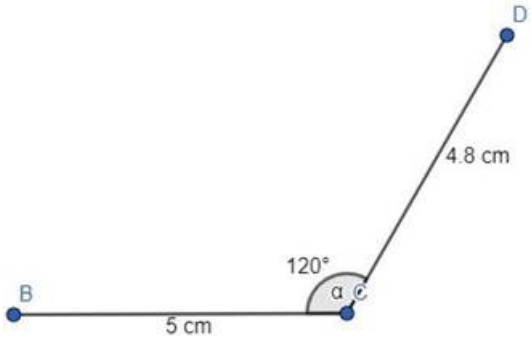
Construct a

Solution:

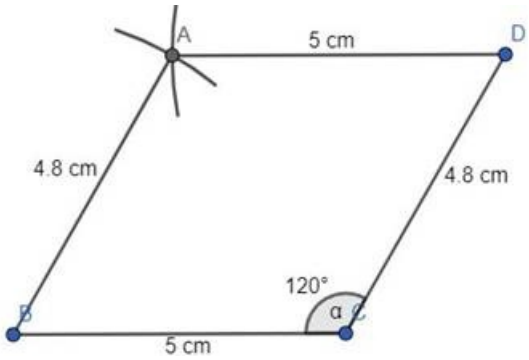
STEP 1: At first draw a base line of 5 cm by scale.



STEP 2: Then draw a 4.8 cm line from C at an angle of 120^0 with the help of protractor. That point is D.



STEP 3: Now, from point B draw an arc of radius 4.8 cm and from point D draw an arc of radius 5 cm with the help of compass. The intersecting point of both the arcs is A. Join BA and DA.

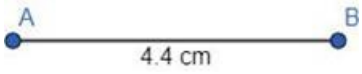


Question: 5

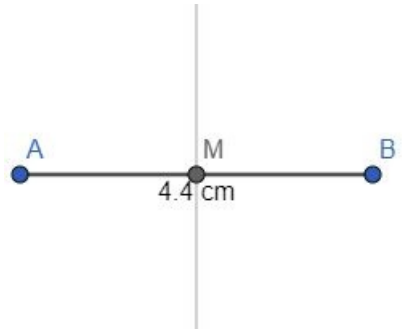
Construct a

Solution:

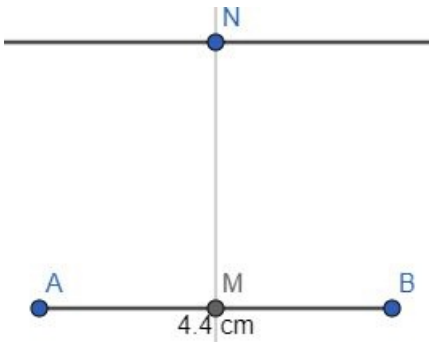
STEP 1: At first draw a base line of 4.4 cm by scale.



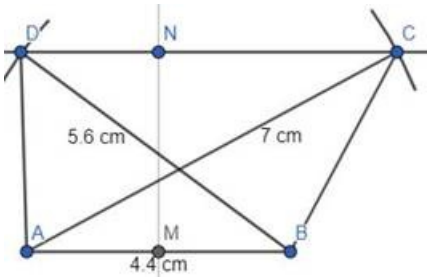
STEP 2: From any point of AB, let it be M, draw a perpendicular to AB by protractor.



STEP 3: Then from any point of the perpendicular line, let N draw another perpendicular line to this line i.e., parallel to AB by protractor.



STEP 4: Now, from A draw an arc of radius 5.6 cm on the 2nd perpendicular at point C and from B draw an arc of radius 7 cm on the 2nd perpendicular at point D with the help of compass. Join AD and BC.



ABCD is the required parallelogram.

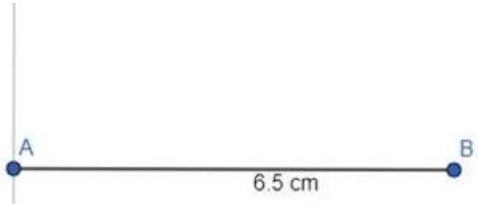
Question: 6

Construct a

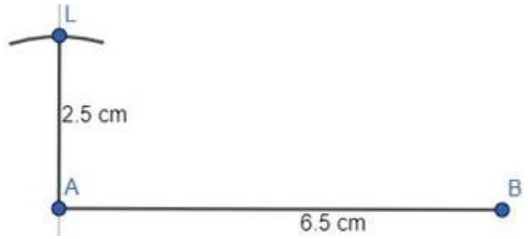
Solution:

STEP 1: At first draw a base line of 6.5 cm by scale.

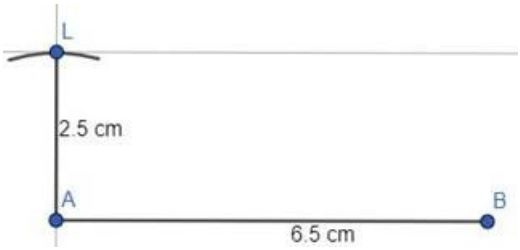
STEP 2: Then draw a line perpendicular to AB from A with the help of protractor.



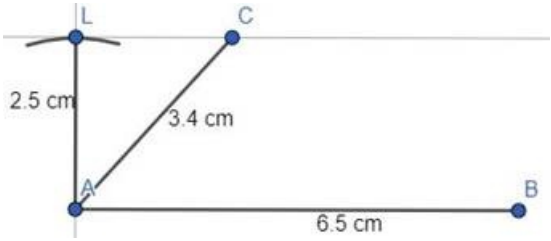
STEP 3: Then from A draw an arc of radius 2.5 cm on the perpendicular line. That intersecting point is L.



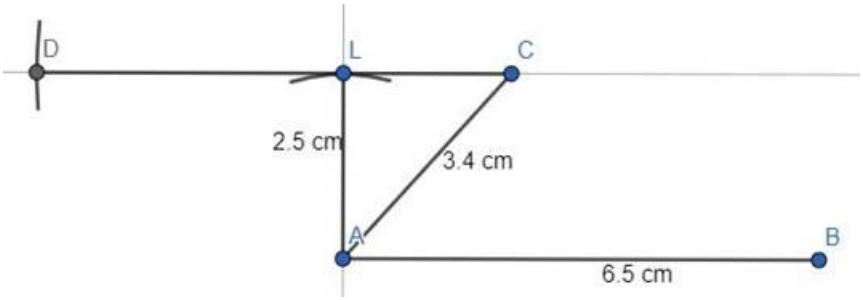
STEP 4: Then from L draw a perpendicular line with respect to AL.



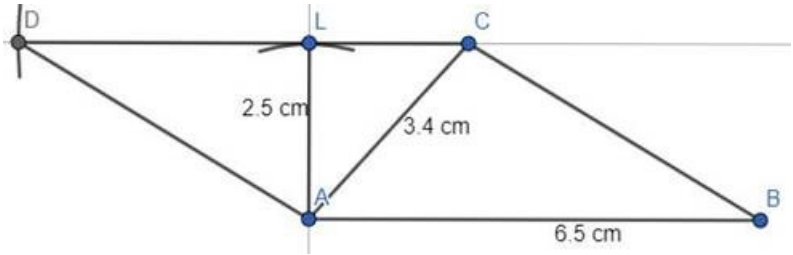
STEP 5: Now from A draw an arc of radius 3.4 cm on the new line perpendicular to AL. That point is C.



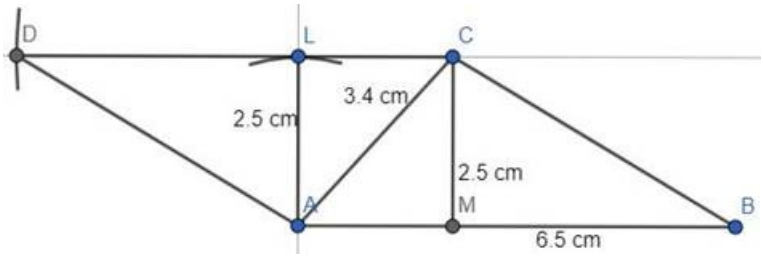
STEP 6: From C draw an arc of radius 6.5 cm on the perpendicular line CL. That intersecting point is D.



STEP 7: Join AD and BC.



According to the problem, AL = 2.5 cm which is the altitude from point A. Similarly from point C altitude is CM which is of same length of AL = 2.5 cm.

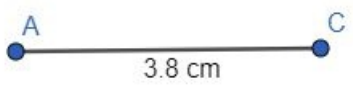


Question: 7

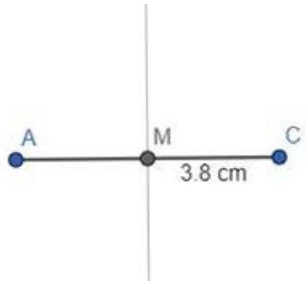
Construct a

Solution:

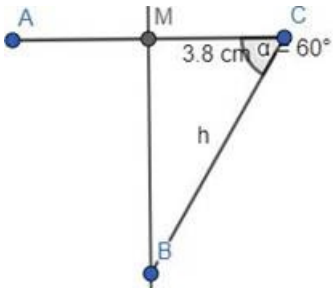
STEP 1: At first draw the diagonal AC of 3.8 cm.



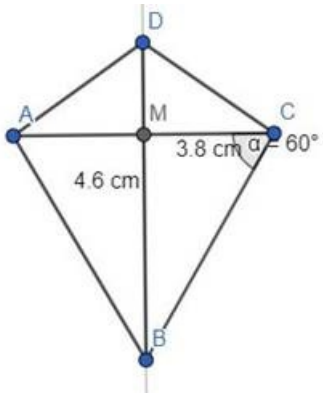
STEP 2: Now from the centre of AC (let M), draw a perpendicular line.



STEP 3: From C draw a 60^0 angle downward with the help of protractor. The intersection point between the line and the perpendicular is B.



STEP 4: From B draw an arc of radius 4.6 cm on the perpendicular line. The intersecting point is D. Join AD, CD and AB.

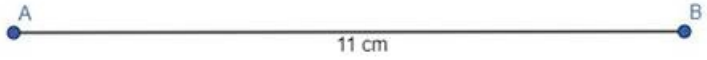


Question: 8

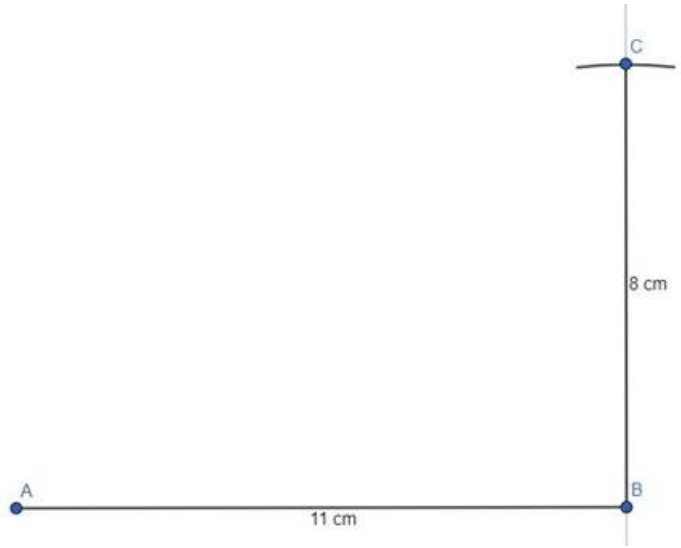
Construct a

Solution:

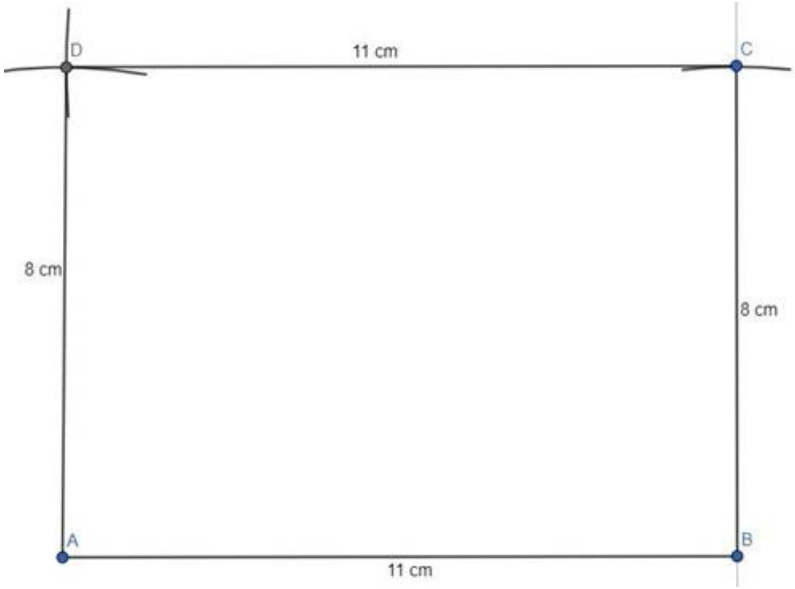
STEP 1: At first draw a base line of 11 cm by scale.



STEP 2: Then draw a line perpendicular to AB from point B. And cut an arc of radius 8 cm from B. The intersection point is C.



STEP 3: Now from A draw an arc of radius 8.5 cm and from C draw an arc of radius 11 cm intersecting at same point. That point is D. Join AD and CD.

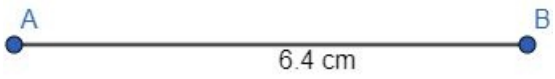


Question: 9

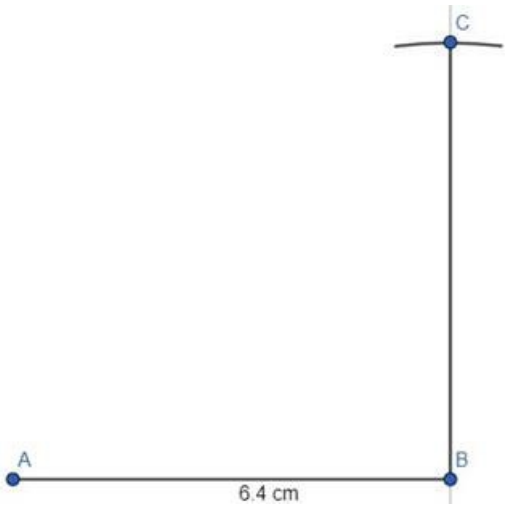
Construct a

Solution:

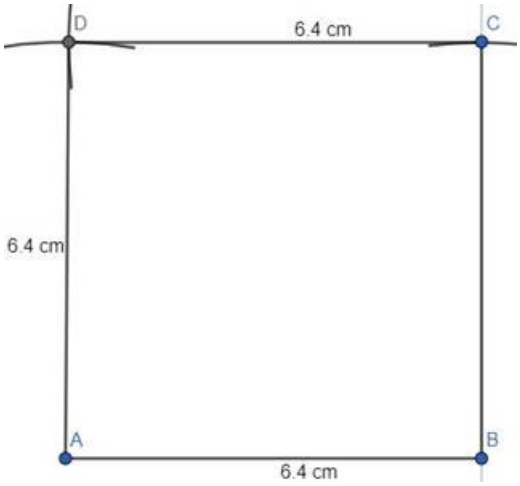
STEP 1: At first draw a base line of 6.4 cm by scale.



STEP 2: Then draw a line perpendicular to AB from point B. And cut an arc of radius 6.4 cm from B. The intersection point is C.



STEP 3: Now, from A draw an arc of radius 6.4 cm and from C draw an arc of radius 6.4 cm intersecting at same point. That point is D. Join AD and CD.

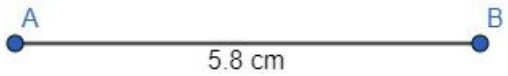


Question: 10

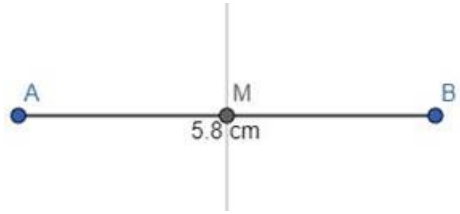
Construct a

Solution:

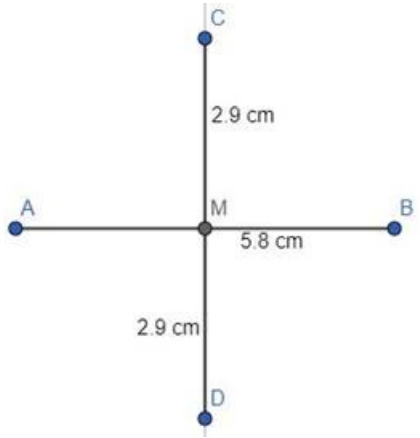
STEP 1: At first draw a diagonal of 5.8 cm by scale.



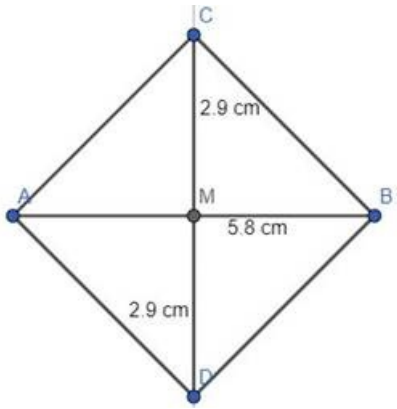
STEP 2: Then draw a perpendicular bisector of AB. Let, centre of AB is M.



STEP 3: Then draw arcs of radius 2.9 cm from M on both the sides of the perpendicular line.



STEP 4: Join AD, DB, BC and CA.



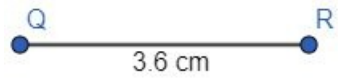
Here ADBC is the square.

Question: 11

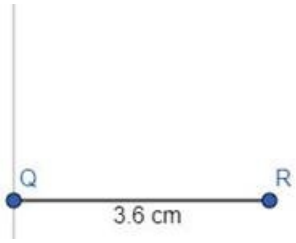
Construct a

Solution:

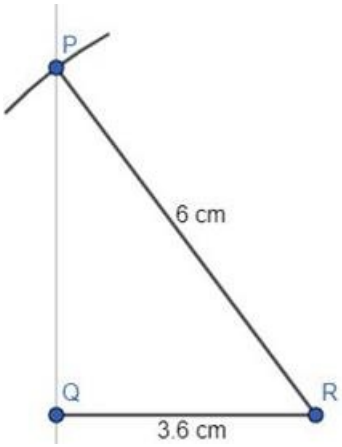
STEP 1: At first draw a base line of 3.6 cm.



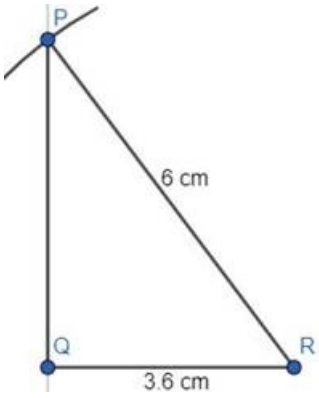
STEP 2: Draw a perpendicular line to QR from Q.



STEP 3: Now from R draw an arc of radius 6 cm on the perpendicular line by compass. The intersecting point is P.

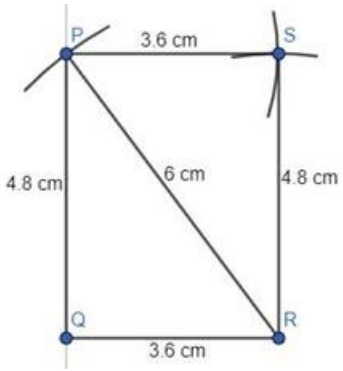


STEP 4: Join PQ. This is the other side of the rectangle. Measure its size with scale.



By measuring the length of PQ by scale, we get, PQ = 4.8 cm.

STEP 5: Draw an arc of radius 3.6 cm from P and draw an arc of radius 4.8 cm from R, intersecting at a same point. This point is S. Join PS and RS.



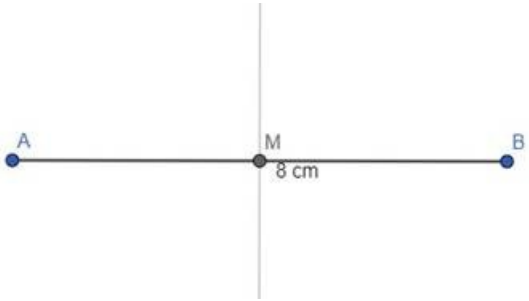
Question: 12

Construct a

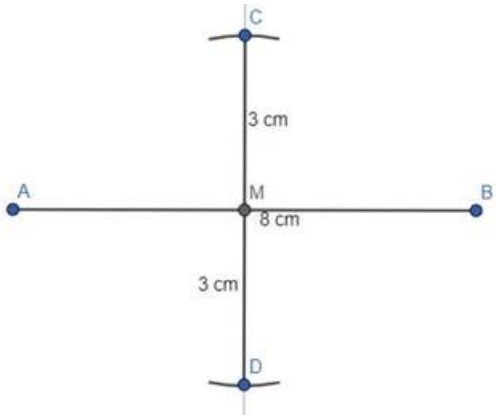
Solution:

STEP 1: At first draw a base line of 8 cm.

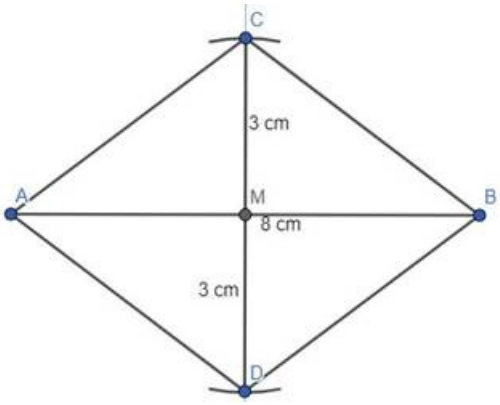
STEP 2: Draw a perpendicular bisector of AB. Let, M be the centre of AB.



STEP 3: Then draw arcs of radius 3 cm from M on both the sides of the perpendicular line with the help of compass.



STEP 4: Join AD, DB, BC and CA.



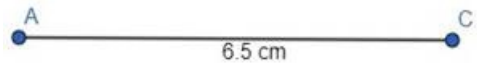
ADBC is the rhombus.

Question: 13

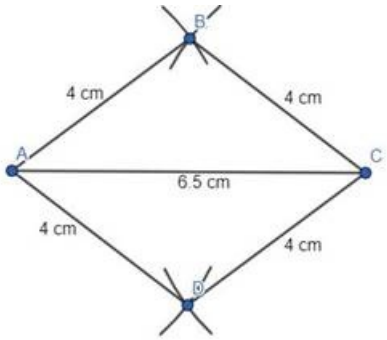
Construct a

Solution:

STEP 1: At first draw diagonal of 6.5 cm.



STEP 2: Then from both the points A and C draw arc of radius 4 cm intersecting at same points, both the sides. Join the two intersecting points from A and C.



ABCD is the rhombus.

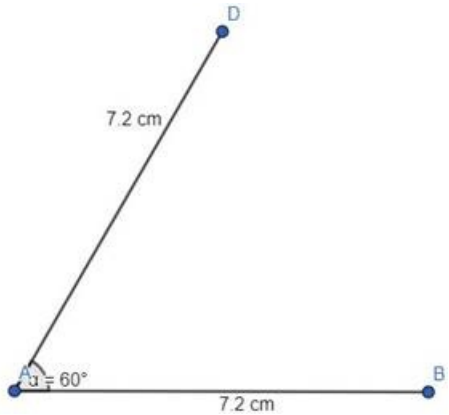
Question: 14

Draw a rhom

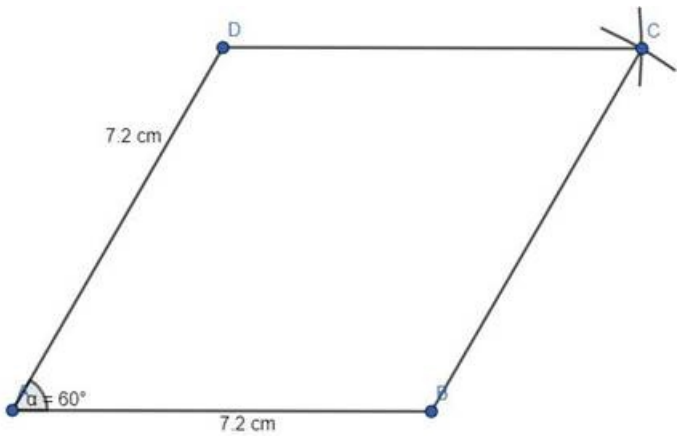
Solution:

STEP 1: At first draw a base line of 7.2 cm.

STEP 2: Draw a 7.2 cm straight line from A at an angle of 60^0 with the help of protractor and scale.



STEP 3: Now from D and B both the points, draw arcs of radius of 7.2 cm, intersecting at a same point. That point is C. Join BC and DC.



This is the rhombus ABCD.

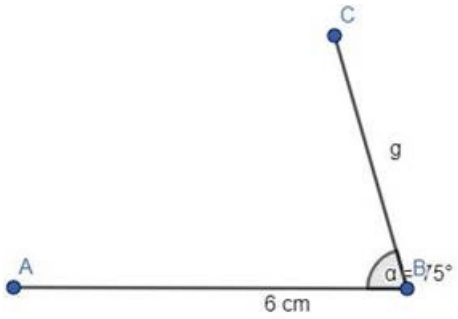
Question: 15

Construct a

Solution:

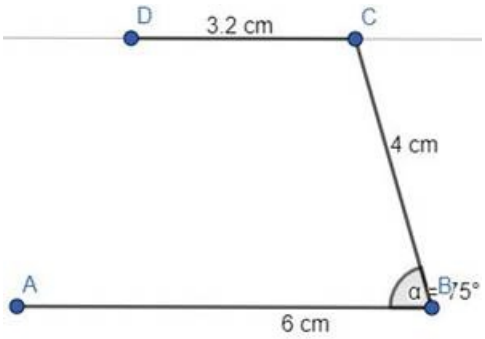
STEP 1: At first draw a base line of 6 cm by scale.

STEP 2: Then draw a 4 cm straight line from B at an angle of 75^0 by protractor and scale. That point is C

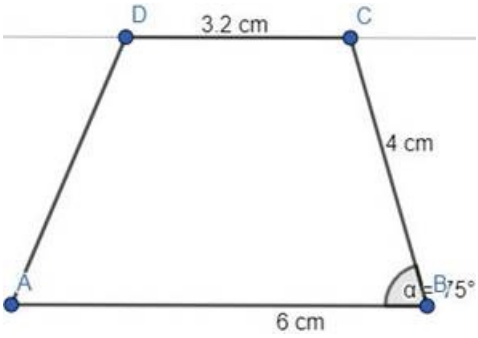


STEP 3: Now draw a line parallel to AB from C.

Draw an arc of radius of 3.2 cm from point C on the straight line.



STEP 4: Join AD.



This is the trapezium ABCD.

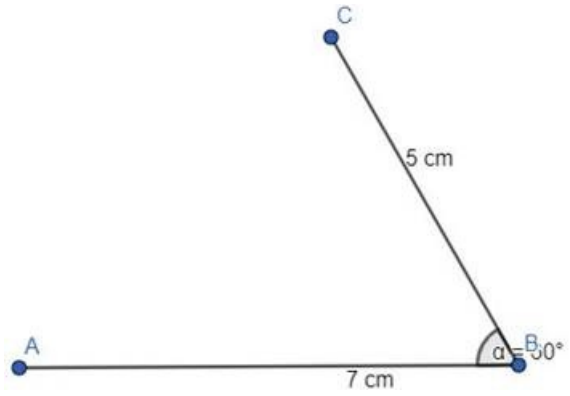
Question: 16

Draw a trap

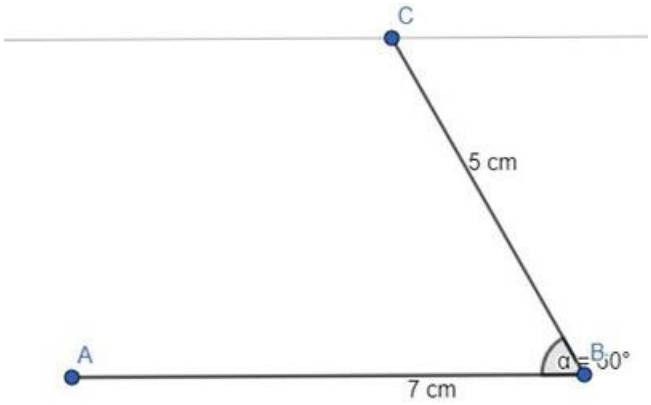
Solution:

STEP 1: At first draw a base line of 7 cm.

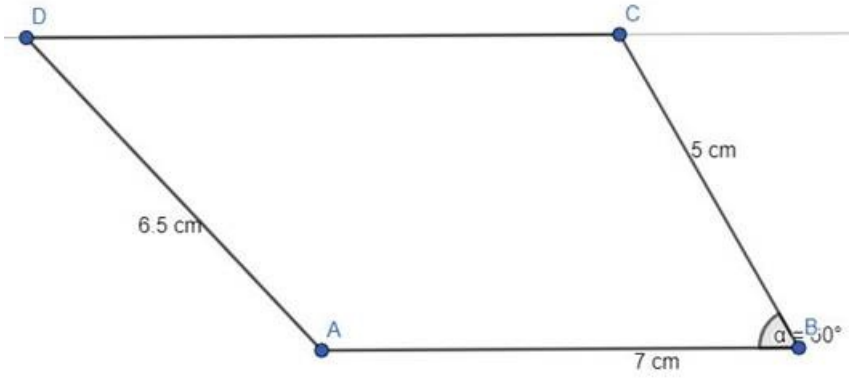
STEP 2: Then from B draw a 5 cm straight line at an angle of 60^0 by protractor and scale. That point is C.



STEP 3: Now draw a line parallel to AB from C.



STEP 4: Cut 6.5 cm from point A on the straight line parallel to AB. That point is D. Join AD.



This is the trapezium ABCD.

Exercise : CCE TEST PAPER-17

Question: 1

Define the

Solution:

(i) Open Curve – Curves whose beginning and end points are different are called as Open Curve.

Begin Point

End Point

(ii) Closed Curve – Curves whose beginning and end points are same but crosses itself are called as Closed Curve.

(iii) Simple Closed Curve – Curves whose beginning and end points are same and does not cross itself are called as Simple Closed Curve.

Question: 2

The angels

Solution:

$36^o, 72^o, 108^o, 144^o$

Let x be the common multiple.

As per question,

$\angle A = x$

$\angle B = 2x$

$\angle C = 3x$

$\angle D = 4x$

As we know that, Sum of all four angles of quadrilateral is 360^o.

$\angle A + \angle B + \angle C + \angle D = 360°$

$x + 2x + 3x + 4x = 360°$

$10x = 360°$

$X = 360/10$

$= 36°$

$\angle A = 1 \text{ X } 36° = 36°$

$\angle B = 2 \text{ X } 36° = 72°$

$\angle C = 3 \text{ X } 36° = 108°$

$\angle D = 4 \text{ X } 36° = 144°$

So, Angles of quadrilateral are 36°, 72°, 108° and 144°.

Question: 3

Two adjacen

Solution:

$\angle A = 72°, \angle B = 108°, \angle C = 72°, \angle D = 108°$

Let x be the common multiple.

As per question,

$\angle A = 2x$

$\angle B = 3x$

∠C = 2x

∠D = 3x

∠A + ∠B = 180° (Adjacent angles of parallelogram is supplementary)

2x + 3x = 180°

5x = 180°

X = 180 / 5 = 36°

∠A = 2 × 36° = 72°

∠B = 3 × 36° = 108°

∠C = 2 × 36° = 72°

∠D = 3 × 36° = 108°

So, Angles of quadrilateral are 72°, 108°, 72° and 108°.

Question: 4

The sides o

Solution:

40 cm, 50 cm

Let x be the common multiple.

As per question,

Length = 4x

Width = 5x

As per formula,

Perimeter = 2× (l + w)

180 = 2× (4x + 5x)

180 = 18x

x = 10

So,

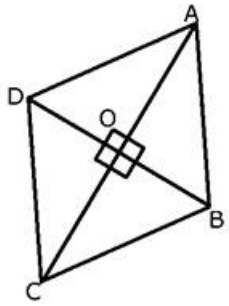
Length = 40 cm

Width = 50 cm

Question: 5

Prove that

Solution:



Let ABCD be a rhombus whose diagonal AC and BD intersect at the point O.

As we know that the diagonals of a parallelogram bisect each other and rhombus is a parallelogram.

So, OA=OC and OB=OD.

From Δ COB and Δ COD we get,

CB = CD (sides of rhombus) and

CO is common in both the triangles.

So, OB = OD

Therefore, by SSS theorem.

Δ COB ≅ Δ COD

∠COB = ∠COD

∠COB + ∠COD = 180° (Linear pair of angles)

Thus, ∠COB = ∠COD = 90°

Hence, the diagonals of a rhombus bisect each other at right angles.

Question: 6

The diagona

Solution:

10 cm

Rhombus forms four congruent right triangles.

Sides of each triangle will be half of rhombus diagonals. i.e. 16/2 = 8 cm and 12/2 = 6 cm

According to Pythagoras theorem,

$a^2 = b^2 + c^2$

$a^2 = 8^2 + 6^2$

$a = \sqrt{(8^2+6^2)}$

$a = \sqrt{(64+36)}$

$a = \sqrt{10}$

a = 10 cm

So, Sides of rhombus is 10cm.

Question: 7

Two opposit

Solution:

To Find: All angles of a parallelogram**Given:** Opposite angles are (3x - 2) and (50 - x)**Diagram:**

Let the parallelogram be ABCD, and opposite angles be ∠B and ∠D, such that∠A = (3x - 2)∠C = (50 - x)

∠B = ∠D (Opposite angles of a parallelogram are equal)

3x - 2 = 50 - x

3x + x = 50 + 2

4x = 52°

x = 13°

Putting the value of x, we get,∠B = 3(13) - 2 = 37°∠D = 50 - 13 = 37°Also. ∠A = ∠C (Opposite angles of a parallelogram are equal)By angle sum property of quadrilateral,∠A + ∠B + ∠C + ∠D = 360°37° + ∠A + 37° + ∠C = 360°2∠A + 74 =360°2∠A = 286°∠A = 143°Hence, ∠A = ∠C =143°

So, Angles of parallelogram is 37°, 143°, 37° and 143°.

Question: 8

The angles

Solution:

Let x be the common multiple.

As per question,

$\angle A = x$

$\angle B = 3x$

$\angle C = 7x$

$\angle D = 9x$

As we know that, Sum of all four angles of quadrilateral is 360º.

$\angle A + \angle B + \angle C + \angle D = 360°$

$x + 3x + 7x + 9x = 360°$

$20x = 360°$

$X= 360/20$

$= 18°$

$\angle A = 1 \times 18° = 18°$

$\angle B = 3 \times 18° = 54°$

$\angle C = 7 \times 18° = 126°$

$\angle D = 9 \times 18° = 162°$

So, largest angle of quadrilateral is 162°.

Question: 9

The length

Solution:

A rectangle can be divided into two triangles.

Sides of each triangle will be 8cm and 10 cm.

According to Pythagoras theorem,

$a^2 = b^2 + c^2$

$10^2 = 8^2 + c^2$

$c = \sqrt{(10^2 - 8^2)}$

$c = \sqrt{36}$

c = 6 cm

So, breadth of rectangle is 6 cm.

Question: 10

In a square

Solution:

As we know that, all sides of square are equal.

So, according to question,

2x + 3 = 3x -5

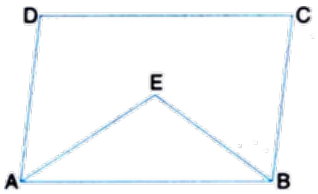
X = 8.

So, Sides of square is 8 cm.

Question: 11

The bisecto

Solution:



Let ABCD is a parallelogram.

The angle bisectors AE and BE of adjacent angles A and B meet at E.

AD || BC (Opposite sides of ||gm)

∠DAB + ∠CBA = 180°

2∠EAB + 2∠EBA = 180° (sum of the interior angles, formed on the same side of the transversal, is 180°)

AE and BE are the bisectors of ∠DAB and ∠CBA respectively.

∠EAB + ∠EBA = 90° ... (1)

In ΔEAB,

∠EAB + ∠EBA + ∠AEB = 180° (sum of the angles of a triangle is 180°)

90° + ∠AEB = 180°

From (1)

∠AEB = 90°

Question: 12

How many di

Solution:

No. of diagonals = $\frac{n(n-3)}{2}$ [n is No. of Sides]

= $\frac{6\times(6-3)}{2}$

= 9

Question: 13

Each interi

Solution:

Interior Angle = 135

So, Exterior Angle = 180 – 135

= 45°

Sum of exterior angles of polygon is 360^{o}

No. of Sides = $\frac{360}{45}$

= 8

Question: 14

Fill in the

Solution:

i. 4 right angles = 360°

Convex Polygon is also a polygon and sum of all exterior angles of any polygon is 360^o

ii. (2n - 4) right angles

Convex Polygon is also a polygon and sum of all interior angles of any polygon is

(n-2)× 180°

Here, n represents the no of sides of polygon.

iii. $\frac{1}{2}n(n-3)$

No. of diagonals = $\frac{n(n-3)}{2}$ [n is No. of Sides]

Question: 15

Fill in the

Solution:

i. 360°

Sum of all exterior angles of any polygon is 360^o

ii. $\left\{180^\circ - \left(\frac{360}{n}\right)^\circ\right\}$

Exterior Angle = $\frac{360}{n}$ [n represents no of sides of polygon]

Interior Angle + Exterior Angle = 180^o

So, Interior Angle = $\left(180 - \frac{360}{n}\right)^\circ$

Question: 16

Fill in the

Solution:

i. 135°

Exterior Angle = $\frac{360}{8}$ [n represents no of sides of polygon]

= 45°

Interior Angle + Exterior Angle = 180^o

Interior Angle = 180 – 45 = 135°

ii. 720°

Sum of Interior Angle = (n-2)× 180°

= (6-2) × 180 °

= 720°

iii. Hexagon

Exterior Angle = $\frac{360}{n}$

60 = $\frac{360}{n}$

N = $\frac{360}{60}$

= 6

No. of Sides is 6.

So, it is a hexagon.

iv. Pentagon

Interior Angle = 108°

Exterior Angle = 180° - 108° = 72°

No. of Sides = $\frac{360}{72}$

= 5

So, it is a pentagon.

v. 5

No. of diagonals = $\frac{n(n-3)}{2}$ [n is No. of Sides]

= $\frac{5\times(5-3)}{2}$

= 5

Question: 17

Write ‘T’ f

Solution:

i. F

The diagonals of square and rectangle only are equal. Rest all the parallelograms like Rhombus etc. do not have diagonals equal in size.

ii. F

Diagonals of Rectangle do not intersect in right angle hence it is not perpendicular to each other. Only in case of Square, diagonal intersects at right angle.

iii. T

In rhombus, diagonals bisect the angles and are the perpendicular bisector of each other.

iv. F

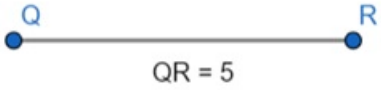
In rhombus, every side has equal length but it in kite only pair of adjacent sides are equal in length.

Question: 18

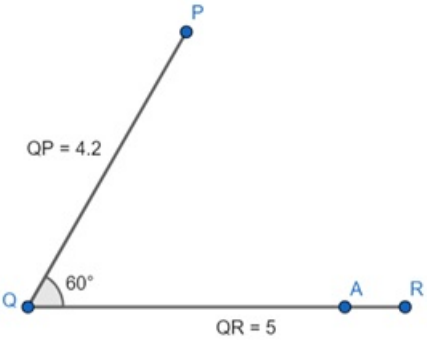
Construct a

Solution:

Step 1 – Draw QR = 5cm



Step 2 – Draw angle PQR = 60 degree and PQ = 4.2 cm



Step 3 – Draw angle QPS = 120 degree and PS = 6 cm