

## Exercise 4.1

## Question 1:

Construct the following quadrilaterals.

(i) Quadrilateral

ABCD  $AB = 4.5$  cm

$BC = 5.5$  cm

$CD = 4$  cm

$AD = 6$  cm

$AC = 7$  cm

(ii) Quadrilateral

JUMP  $JU = 3.5$  cm

$UM = 4$  cm

$MP = 5$  cm

$PJ = 4.5$  cm

$PU = 6.5$  cm

(iii) Parallelogram MORE

$OR = 6$  cm

$RE = 4.5$  cm

$EO = 7.5$  cm

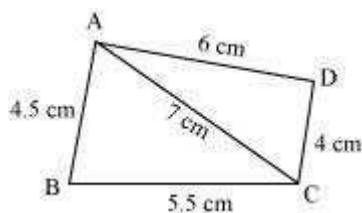
(iv) Rhombus BEST

$BE = 4.5$  cm

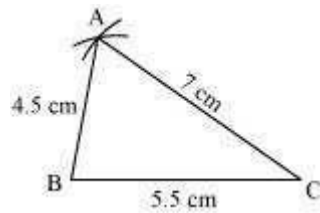
$ET = 6$  cm

Answer:

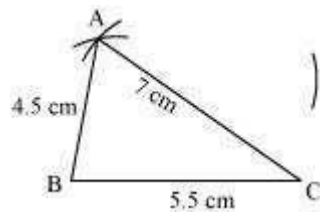
(i) Firstly, a rough sketch of this quadrilateral can be drawn as follows.



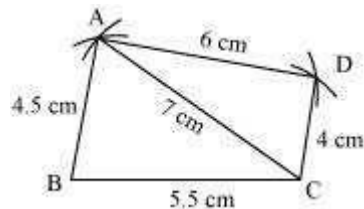
(1)  $\triangle ABC$  can be constructed by using the given measurements as follows.



(2) Vertex D is 6 cm away from vertex A. Therefore, while taking A as centre, draw an arc of radius 6 cm.

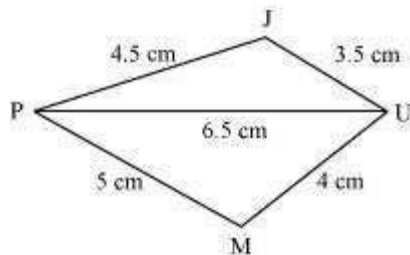


(3) Taking C as centre, draw an arc of radius 4 cm, cutting the previous arc at point D. Join D to A and C.

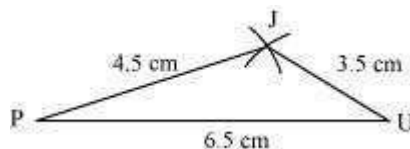


ABCD is the required quadrilateral.

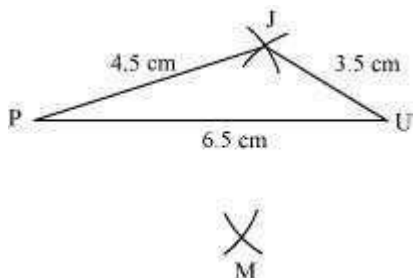
(ii) Firstly, a rough sketch of this quadrilateral can be drawn as follows.



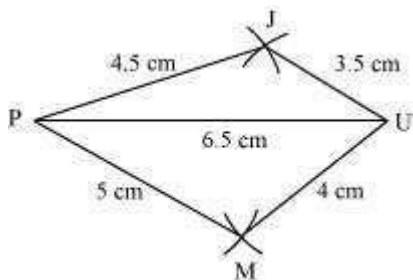
(1) JUP can be constructed by using the given measurements as follows.



(2) Vertex M is 5 cm away from vertex P and 4 cm away from vertex U. Taking P and U as centres, draw arcs of radii 5 cm and 4 cm respectively. Let the point of intersection be M.



(3) Join M to P and U.

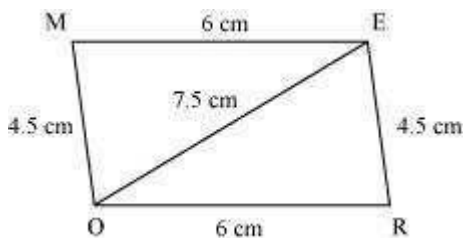


JUMP is the required quadrilateral.

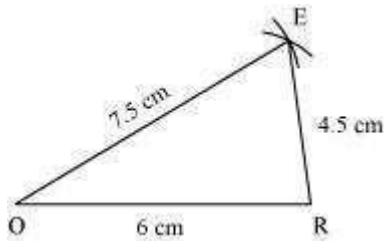
(iii) We know that opposite sides of a parallelogram are equal in length and also these are parallel to each other.

Hence,  $ME = OR$ ,  $MO = ER$

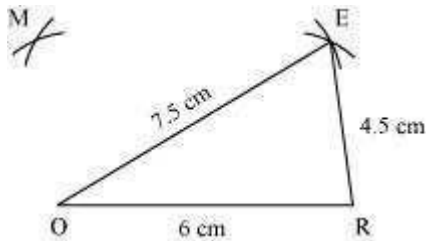
A rough sketch of this parallelogram can be drawn as follows.



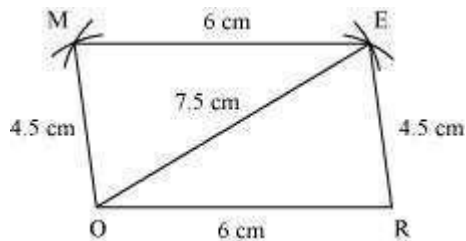
(1) EOR can be constructed by using the given measurements as follows.



(2) Vertex M is 4.5 cm away from vertex O and 6 cm away from vertex E. Therefore, while taking O and E as centres, draw arcs of 4.5 cm radius and 6 cm radius respectively. These will intersect each other at point M.



(3) Join M to O and E.

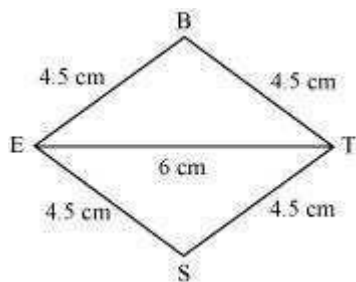


MORE is the required parallelogram.

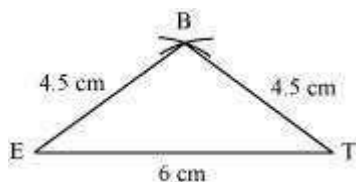
(iv) We know that all sides of a rhombus are of the same measure.

Hence,  $BE = ES = ST = TB$

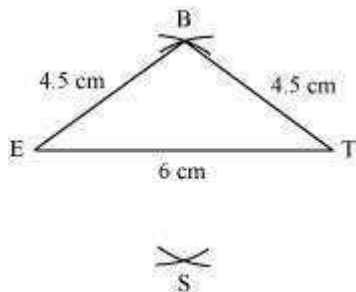
A rough sketch of this rhombus can be drawn as follows.



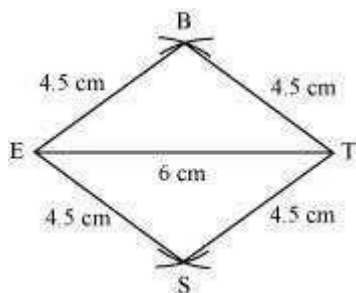
(1) BET can be constructed by using the given measurements as follows.



(2) Vertex S is 4.5 cm away from vertex E and also from vertex T. Therefore, while taking E and T as centres, draw arcs of 4.5 cm radius, which will be intersecting each other at point S.



(3) Join S to E and T.



BEST is the required rhombus.

## Exercise 4.2

Question 1:

Construct the following quadrilaterals.

(i) Quadrilateral LIFT

LI = 4 cm

IF = 3 cm

TL = 2.5 cm

LF = 4.5 cm

IT = 4 cm

(ii) Quadrilateral

GOLD OL = 7.5 cm

GL = 6 cm

GD = 6 cm

LD = 5 cm

OD = 10 cm

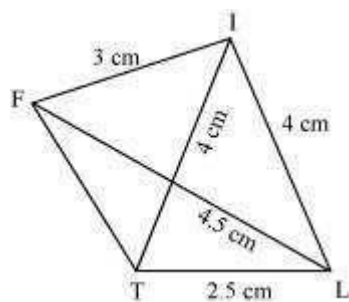
(iii) Rhombus

BEND BN = 5.6 cm

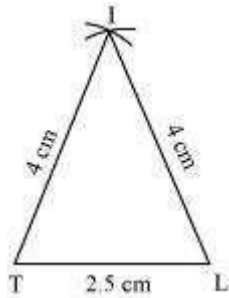
DE = 6.5

cm Answer:

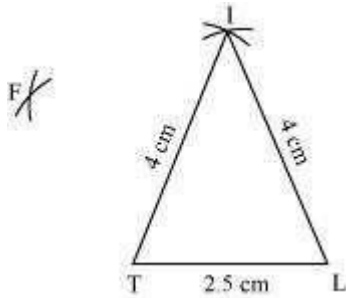
(i) A rough sketch of this quadrilateral can be drawn as follows.



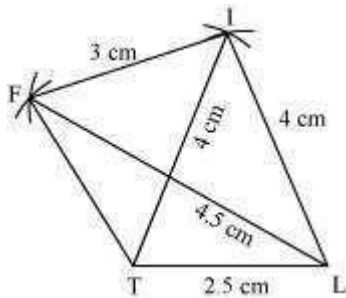
(1) ITL can be constructed by using the given measurements as follows.



(2) Vertex F is 4.5 cm away from vertex L and 3 cm away from vertex I. Therefore, while taking L and I as centres, draw arcs of 4.5 cm radius and 3 cm radius respectively, which will be intersecting each other at point F.

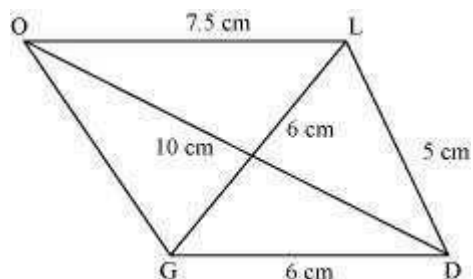


(3) Join F to T and F to I.

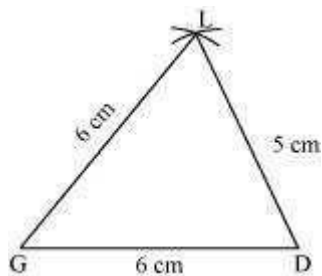


LIFT is the required quadrilateral.

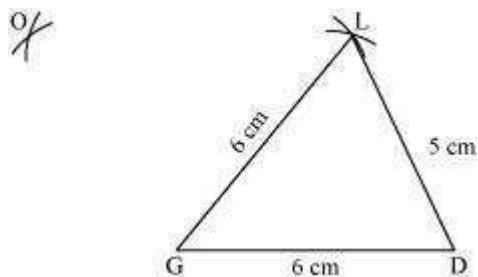
(ii) A rough sketch of this quadrilateral can be drawn as follows.



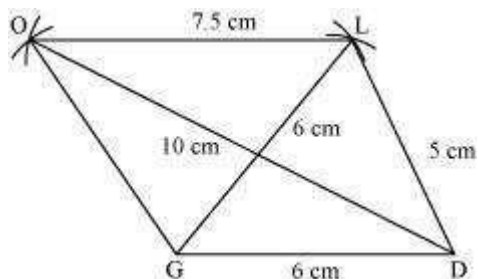
(1) GDL can be constructed by using the given measurements as follows.



(2) Vertex O is 10 cm away from vertex D and 7.5 cm away from vertex L. Therefore, while taking D and L as centres, draw arcs of 10 cm radius and 7.5 cm radius respectively. These will intersect each other at point O.



(3) Join O to G and L.



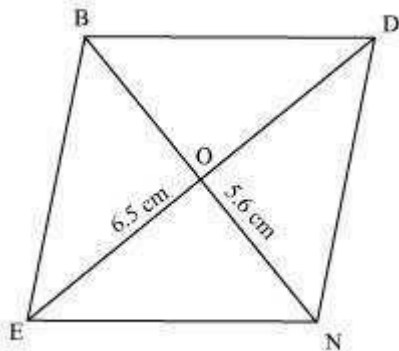


GOLD is the required quadrilateral.

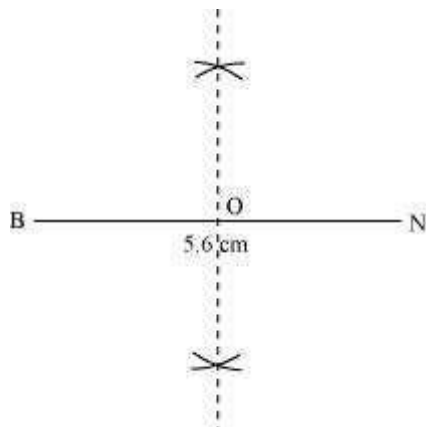
(iii) We know that the diagonals of a rhombus always bisect each other at  $90^\circ$ . Let us assume that these are intersecting each other at point O in this rhombus.

Hence,  $EO = OD = 3.25$  cm

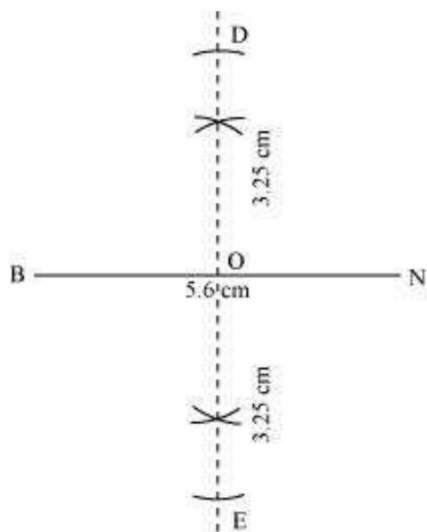
A rough sketch of this rhombus can be drawn as follows.



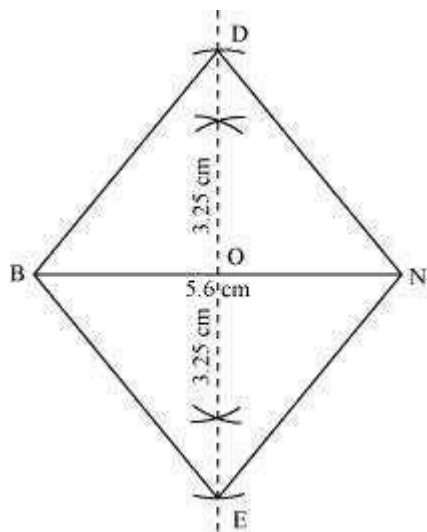
(1) Draw a line segment BN of 5.6 cm and also draw its perpendicular bisector. Let it intersect the line segment BN at point O.



(2) Taking O as centre, draw arcs of 3.25 cm radius to intersect the perpendicular bisector at point D and E.



(3) Join points D and E to points B and N.



BEND is the required quadrilateral.

Exercise 4.3

Question 1:

Construct the following quadrilaterals.

(i) Quadrilateral

MORE MO = 6 cm

OR = 4.5 cm

$\angle M = 60^\circ$

$\angle O = 105^\circ$

$\angle R = 105^\circ$

(ii) Quadrilateral PLAN

PL = 4 cm

LA = 6.5 cm

$\angle P = 90^\circ$

$\angle A = 110^\circ$

$\angle N = 85^\circ$

(iii) Parallelogram HEAR

HE = 5 cm

EA = 6 cm

$\angle R = 85^\circ$

(iv) Rectangle OKAY

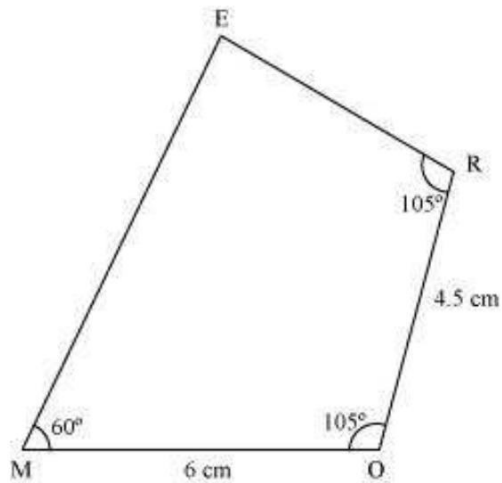
OK = 7 cm

KA = 5 cm

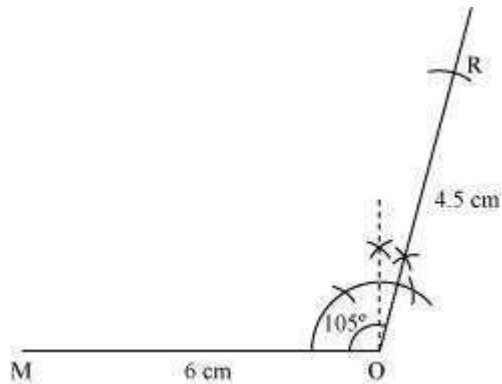
Answer:

(i)

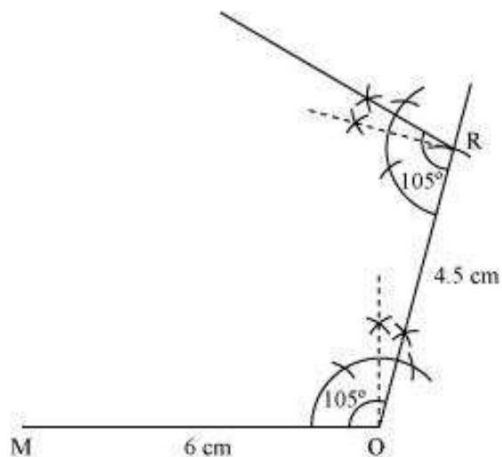
(1) A rough sketch of this quadrilateral can be drawn as follows.



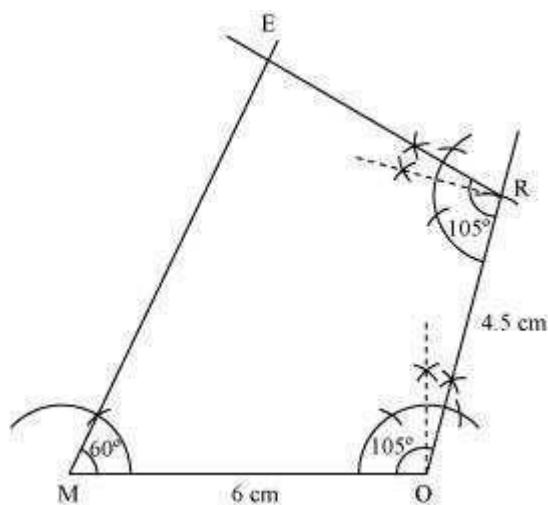
(2) Draw a line segment MO of 6 cm and an angle of  $105^\circ$  at point O. As vertex R is 4.5 cm away from the vertex O, cut a line segment OR of 4.5 cm from this ray.



(3) Again, draw an angle of  $105^\circ$  at point R.



(4) Draw an angle of  $60^\circ$  at point M. Let this ray meet the previously drawn ray from R at point E.



MORE is the required quadrilateral.

(ii)

(1) The sum of the angles of a quadrilateral is  $360^\circ$ .

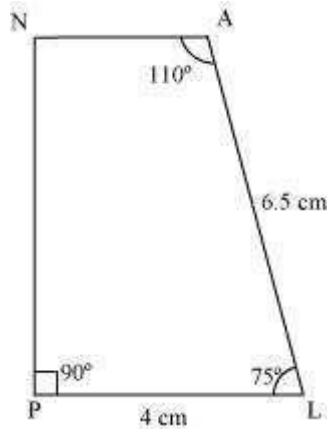
In quadrilateral PLAN,  $\angle P + \angle L + \angle A + \angle N =$

$360^\circ$   $90^\circ + \angle L + 110^\circ + 85^\circ = 360^\circ$   $285^\circ + \angle L =$

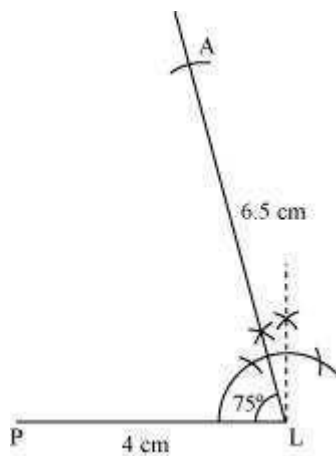
$360^\circ$

$$\angle L = 360^\circ - 285^\circ = 75^\circ$$

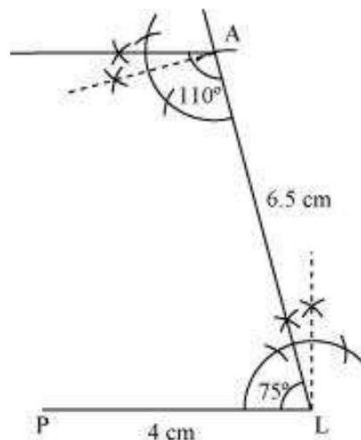
(2) A rough sketch of this quadrilateral is as follows.



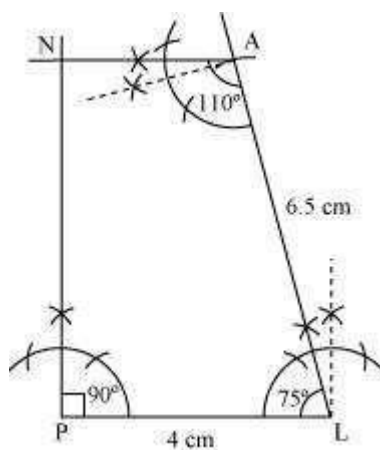
(3) Draw a line segment PL of 4 cm and draw an angle of  $75^\circ$  at point L. As vertex A is 6.5 cm away from vertex L, cut a line segment LA of 6.5 cm from this ray.



(4) Again draw an angle of  $110^\circ$  at point A.



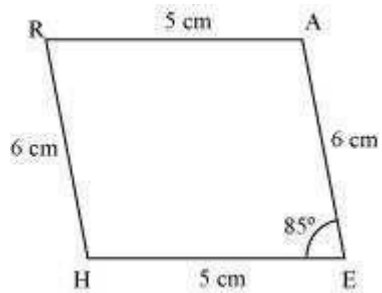
(5) Draw an angle of  $90^\circ$  at point P. This ray will meet the previously drawn ray from A at point N.



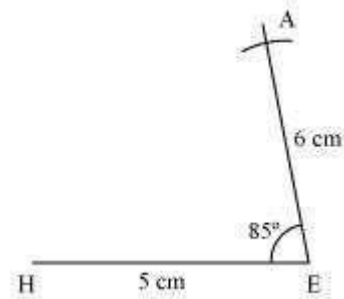
PLAN is the required quadrilateral.

(iii)

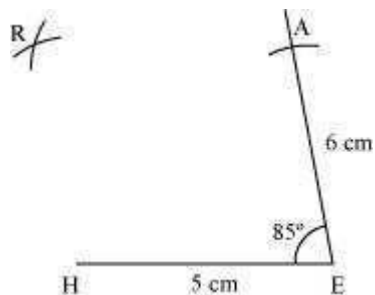
(1) Firstly, a rough sketch of this quadrilateral is as follows.



(2) Draw a line segment HE of 5 cm and an angle of  $85^\circ$  at point E. As vertex A is 6 cm away from vertex E, cut a line segment EA of 6 cm from this ray.

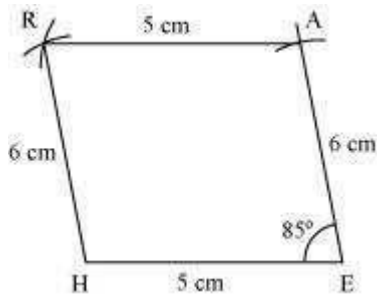


(3) Vertex R is 6 cm and 5 cm away from vertex H and A respectively. By taking radius as 6 cm and 5 cm, draw arcs from point H and A respectively. These will be intersecting each other at point R.



4. Join R to H and A.

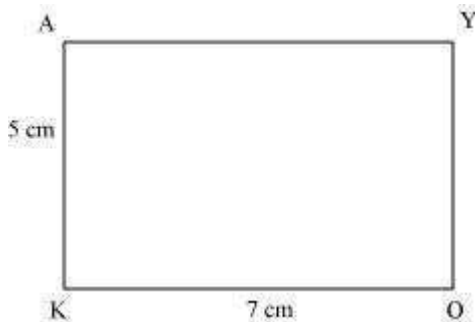




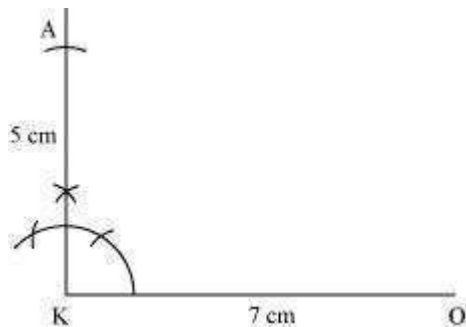
HEAR is the required quadrilateral.

(iv)

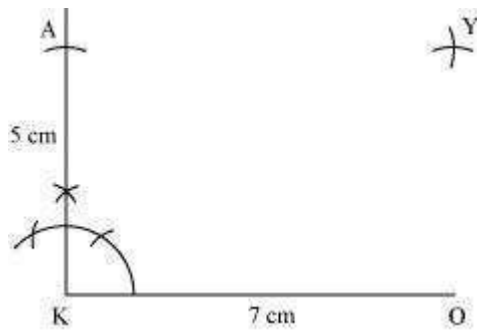
(1) A rough sketch of this quadrilateral is drawn as follows.



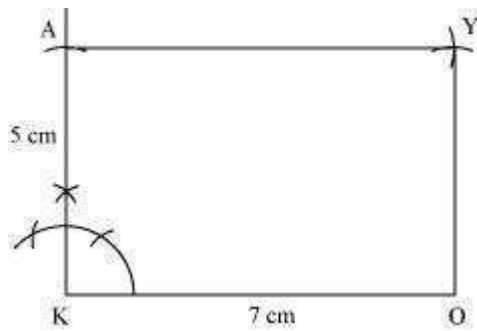
(2) Draw a line segment OK of 7 cm and an angle of  $90^\circ$  at point K. As vertex A is 5 cm away from vertex K, cut a line segment KA of 5 cm from this ray.



(3) Vertex Y is 5 cm and 7 cm away from vertex O and A respectively. By taking radius as 5 cm and 7 cm, draw arcs from point O and A respectively. These will be intersecting each other at point Y.



(4) Join Y to A and O.



OKAY is the required quadrilateral.

## Exercise 4.4

Question 1:

Construct the following quadrilaterals,

(i) Quadrilateral DEAR

DE = 4 cm

EA = 5 cm

AR = 4.5 cm

 $\angle E = 60^\circ$  $\angle A = 90^\circ$ 

(ii) Quadrilateral

TRUE TR = 3.5 cm

RU = 3 cm

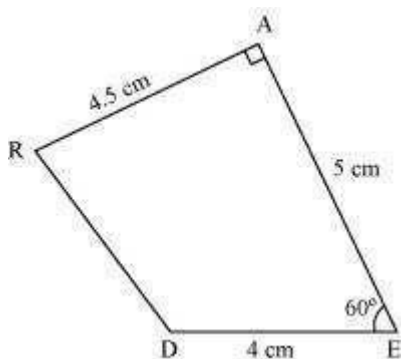
UE = 4 cm

 $\angle R = 75^\circ$  $\angle U = 120^\circ$ 

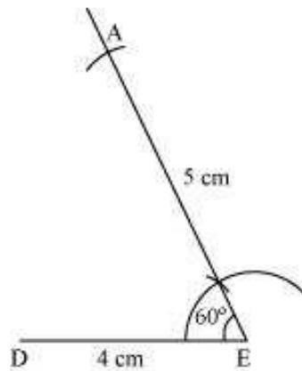
Answer:

(i)

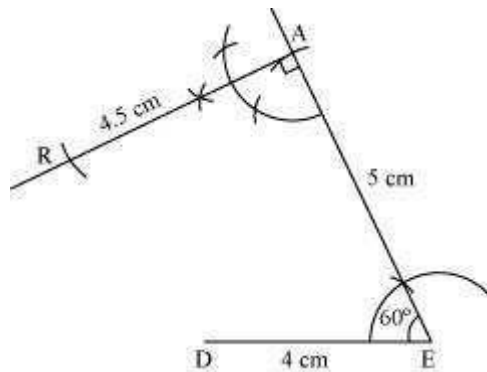
(1) A rough sketch of this quadrilateral can be drawn as follows.



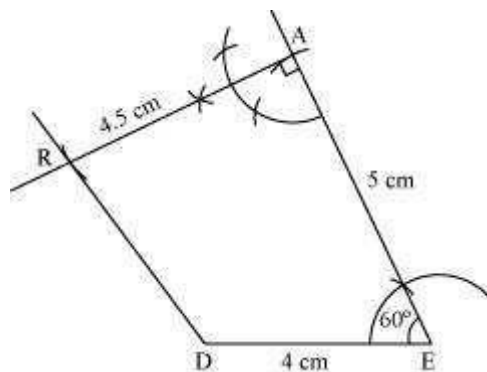
(2) Draw a line segment DE of 4 cm and an angle of  $60^\circ$  at point E. As vertex A is 5 cm away from vertex E, cut a line segment EA of 5 cm from this ray.



(3) Again draw an angle of  $90^\circ$  at point A. As vertex R is 4.5 cm away from vertex A, cut a line segment RA of 4.5 cm from this ray.



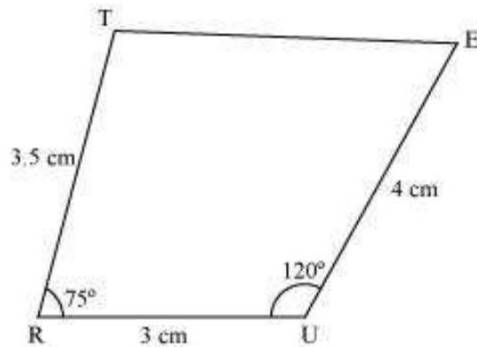
(4) Join D to R.



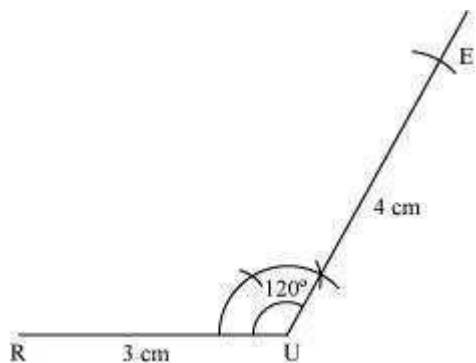
DEAR is the required quadrilateral.

(ii)

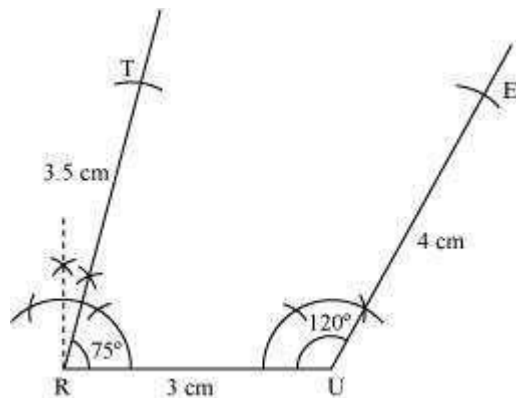
(1) A rough sketch of this quadrilateral can be drawn as follows.



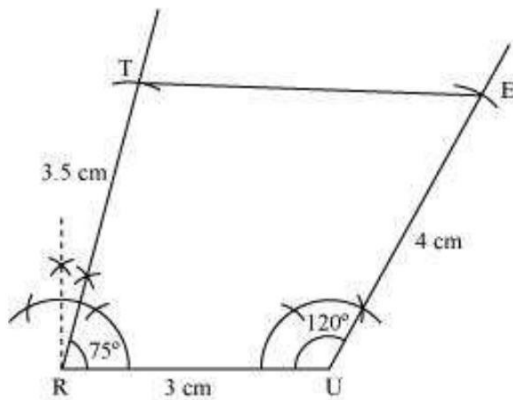
(2) Draw a line segment RU of 3 cm and an angle of  $120^\circ$  at point U. As vertex E is 4 cm away from vertex U, cut a line segment UE of 4 cm from this ray.



(3) Next, draw an angle of  $75^\circ$  at point R. As vertex T is 3.5 cm away from vertex R, cut a line segment RT of 3.5 cm from this ray.



(4) Join T to E.



TRUE is the required quadrilateral.

## Exercise 4.5

Question 1:

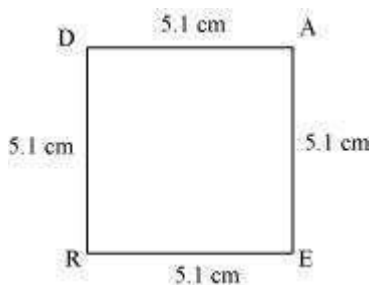
Draw the following:

The square READ with  $RE = 5.1$  cm

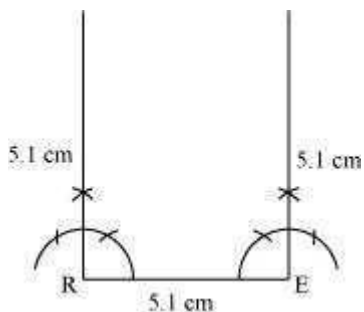
Answer:

All the sides of a square are of the same measure and also all the interior angles of a square are of  $90^\circ$  measure. Therefore, the given square READ can be drawn as follows.

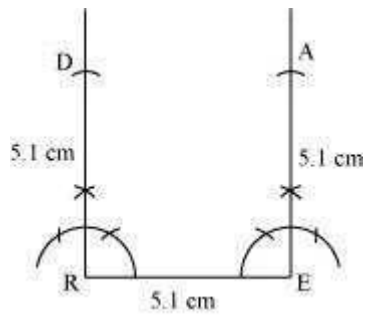
(1) A rough sketch of this square READ can be drawn as follows.



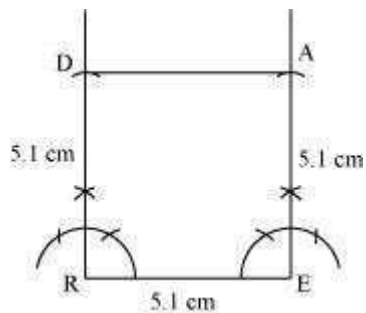
(2) Draw a line segment RE of 5.1 cm and an angle of  $90^\circ$  at point R and E.



(3) As vertex A and D are 5.1 cm away from vertex E and R respectively, cut line segments EA and RD, each of 5.1 cm from these rays.



(4) Join D to A.



READ is the required square.

Question 2:

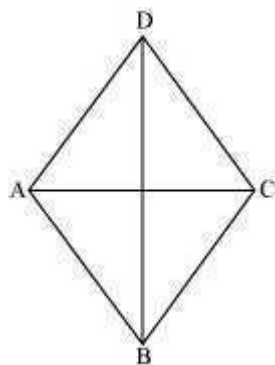
Draw the following:

A rhombus whose diagonals are 5.2 cm and 6.4 cm long.

Answer:

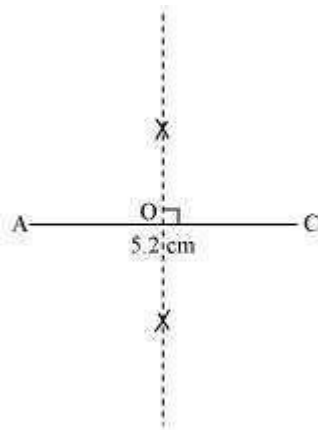
In a rhombus, diagonals bisect each other at  $90^\circ$ . Therefore, the given rhombus ABCD can be drawn as follows.

(1) A rough sketch of this rhombus ABCD is as follows.

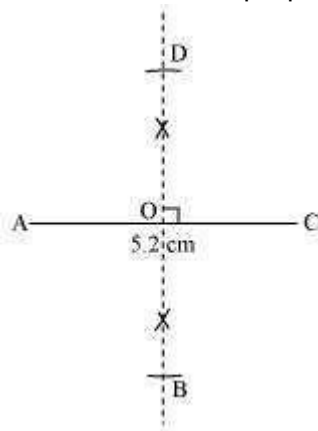




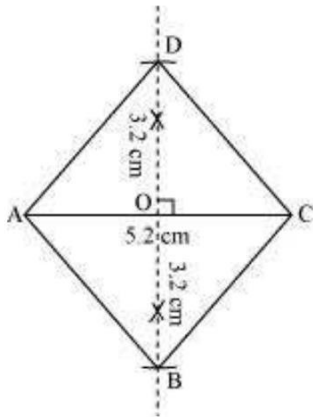
(2) Draw a line segment AC of 5.2 cm and draw its perpendicular bisector. Let it intersect the line segment AC at point O.



(3) Draw arcs of  $\frac{6.4 \text{ cm}}{2} = 3.2 \text{ cm}$  on both sides of this perpendicular bisector. Let the arcs intersect the perpendicular bisector at point B and D.



(4) Join points B and D with points A and C.



ABCD is the required rhombus.

Question 3:

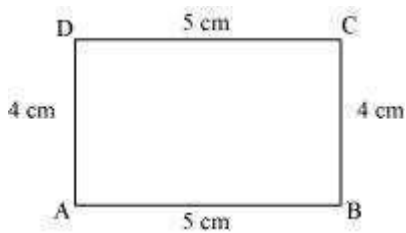
Draw the following:

A rectangle with adjacent sides of length 5 cm and 4 cm.

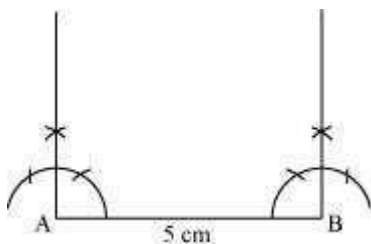
Answer:

Opposite sides of a rectangle have their lengths of same measure and also, all the interior angles of a rectangle are of  $90^\circ$  measure. The given rectangle ABCD may be drawn as follows.

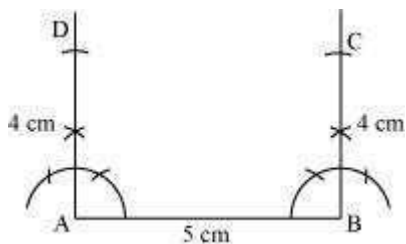
(1) A rough sketch of this rectangle ABCD can be drawn as follows.



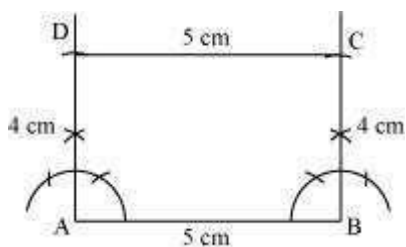
(2) Draw a line segment AB of 5 cm and an angle of  $90^\circ$  at point A and B.



(3) As vertex C and D are 4 cm away from vertex B and A respectively, cut line segments AD and BC, each of 4 cm, from these rays.



(4) Join D to C.



ABCD is the required rectangle.

Question 4:

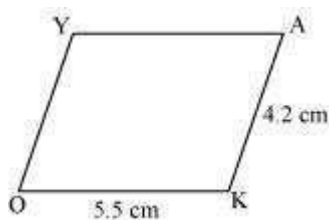
Draw the following:

A parallelogram OKAY where  $OK = 5.5$  cm and  $KA = 4.2$  cm.

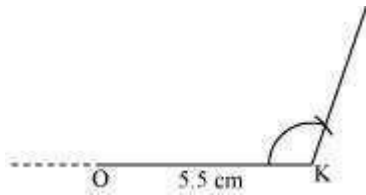
Answer:

Opposite sides of a parallelogram are equal and parallel to each other. The given parallelogram OKAY can be drawn as follows.

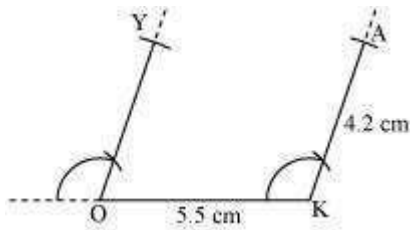
(1) A rough sketch of this parallelogram OKAY is drawn as follows.



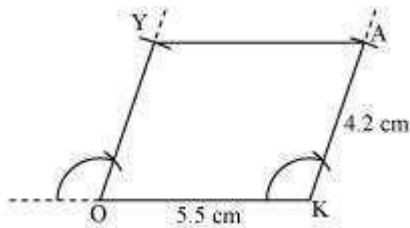
(2) Draw a line segment OK of 5.5 cm and a ray at point K at a convenient angle.



(3) Draw a ray at point O parallel to the ray at K. As the vertices, A and Y, are 4.2 cm away from the vertices K and O respectively, cut line segments KA and OY, each of 4.2 cm, from these rays.



(4) Join Y to A.



OKAY is the required rectangle.