

# NCERT SOLUTIONS

CLASS - 8TH



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Class : 8th  
Subject : Maths  
Chapter : 4  
Chapter Name : Practical Geometry

### Exercise 4.1

Q1 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

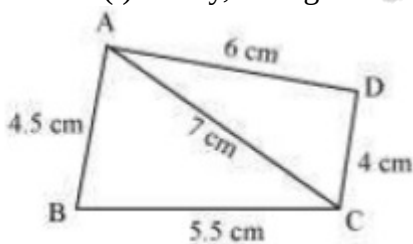
EO = 7.5 cm

(iv) Rhombus BEST

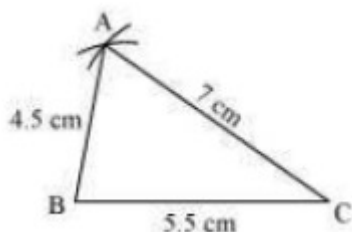
BE = 4.5 cm

ET = 6 cm

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

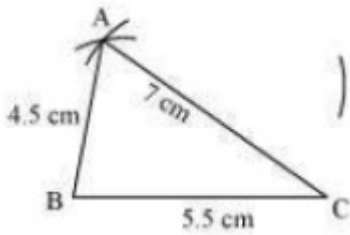


(1)  $\triangle ABC$  can be constructed by using the given measurements as follows.

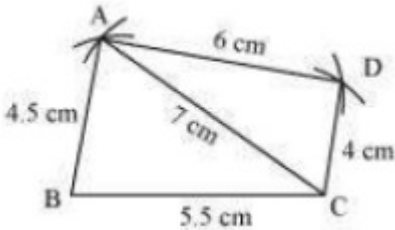


(2) Vertex D is 6 cm away from vertex A. Therefore, while taking A as centre, draw an arc of radius 6

cm.

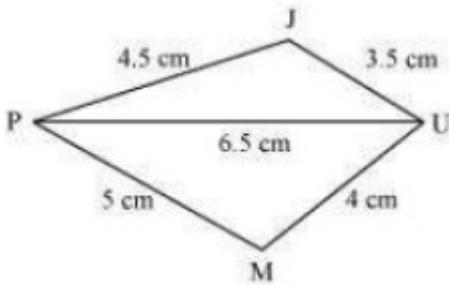


(3) Taking C as centre, draw an arc of radius 4 cm, cutting the previous arc at point D. Join D to A and C.

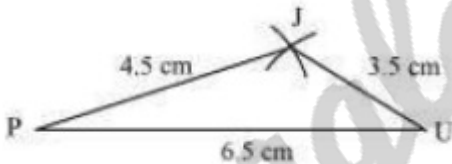


ABCD is the required quadrilateral.

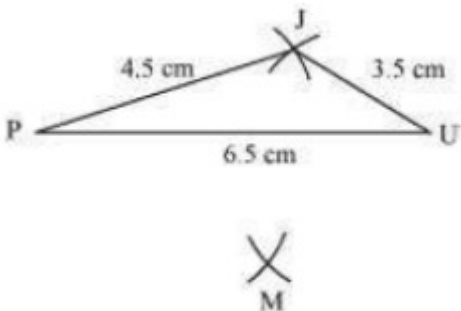
(ii) Firstly, a rough sketch of this quadrilateral can be drawn as follows.



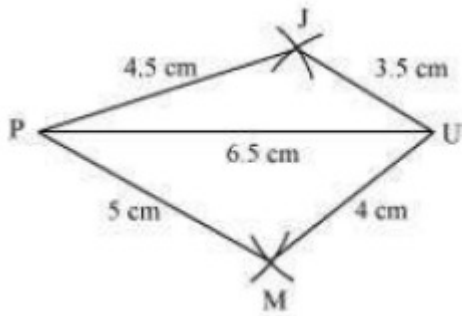
(1)  $\Delta JUP$  can be constructed by using the given measurements as follows.



(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.

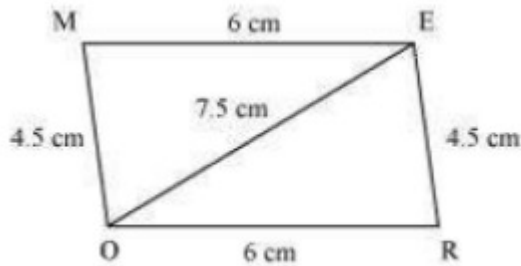


JUMP is the required quadrilateral.

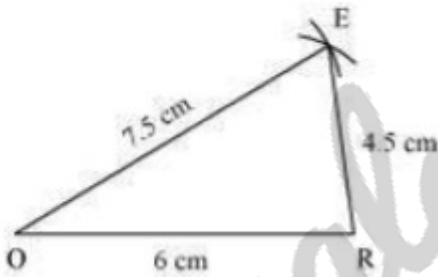
(iii) We know that opposite sides of a parallelogram are equal in length and also these are parallel to each other.

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

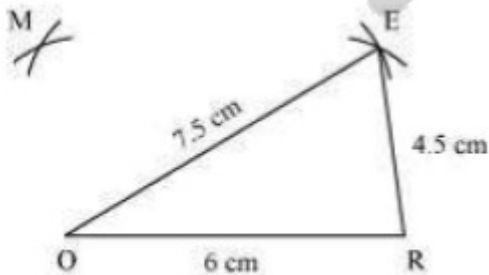
A rough sketch of this parallelogram can be drawn as follows.



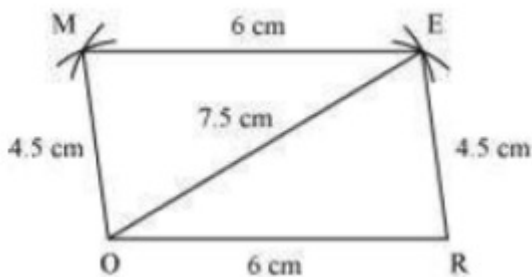
(1)  $\triangle EOR$  can be constructed by using the given measurements as follows.



(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.

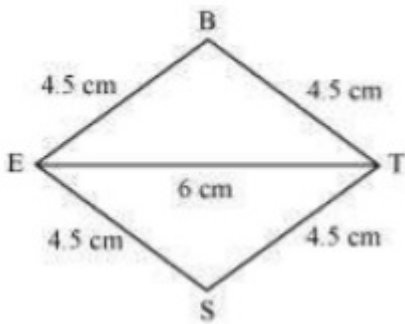


MORE is the required parallelogram.

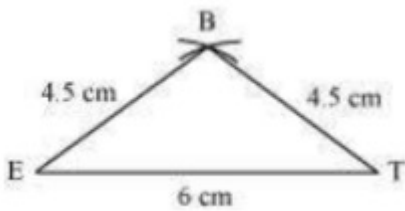
(iv) We know that all sides of a rhombus are of the same measure.

Hence,  $BE = ES = ST = TB$

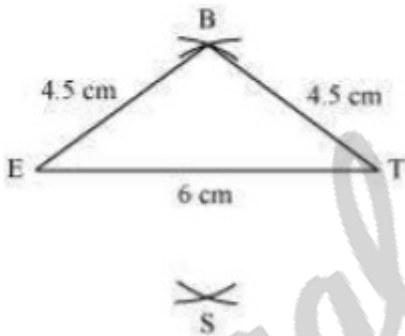
A rough sketch of this rhombus can be drawn as follows.



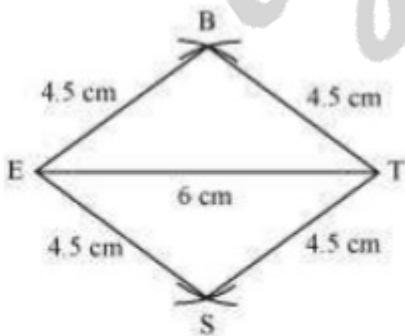
(1)  $\triangle BET$  can be obstructed by using the given measurements as follows.



(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.

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### Exercise 4.2

Q1 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

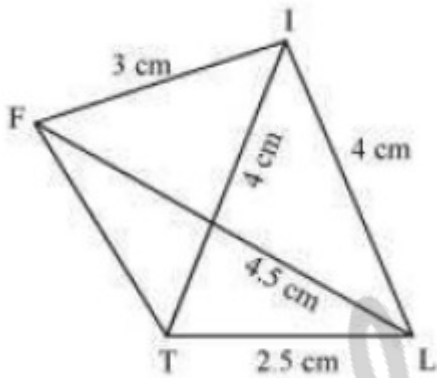
OD = 10 cm

(iii) Rhombus BEND

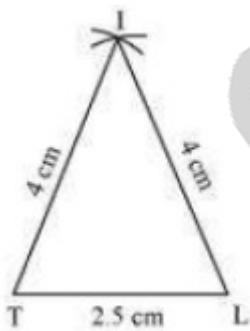
BN = 5.6 cm

DE = 6.5 cm

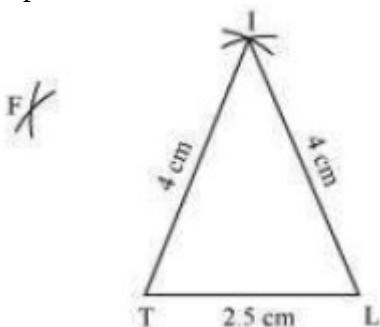
Answer. (i) A rough sketch of this quadrilateral can be drawn as follows.



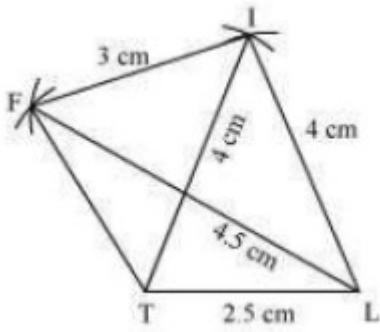
(1)  $\triangle ITL$  can be constructed by using the given measurements as follows.



(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 arc of 4.5 cm radius and 3 cm radius respectively, which will be intersecting each other at point F.

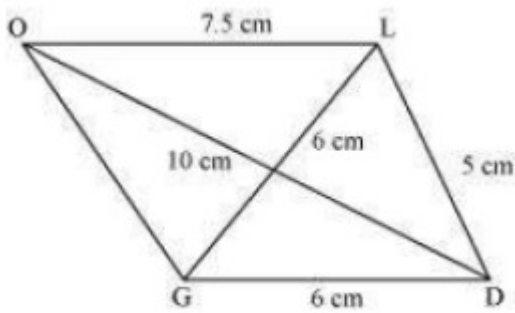


(3) Join F to T and F to I.

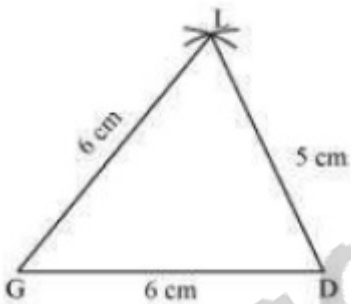


LIFT is the required quadrilateral.

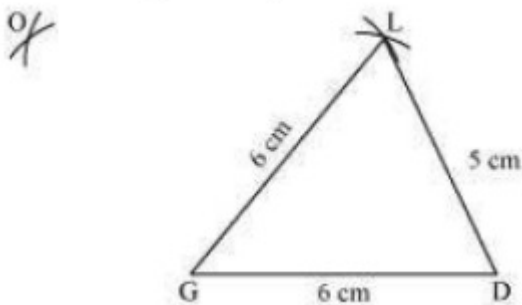
(ii) A rough sketch of this quadrilateral can be drawn as follows.



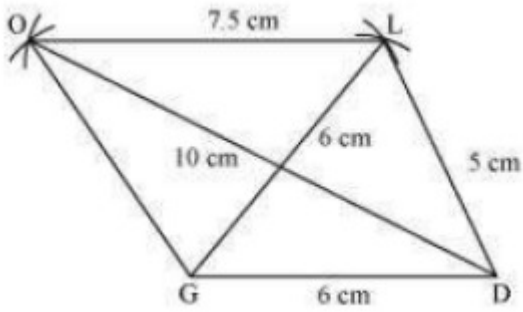
(1)  $\triangle GDL$  can be constructed by using the given measurements as follows.



(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.

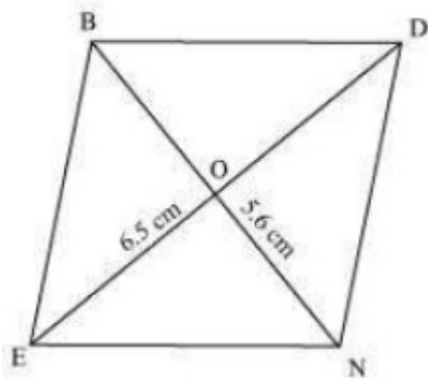


GOLD is the required quadrilateral.

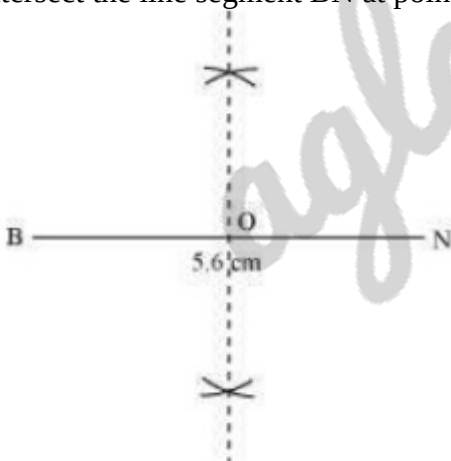
(iii) We know that the diagonals of a rhombus always bisect each other at  $90^\circ$ . Let us assume that these are intersecting each other at point O in this rhombus.

Hence,  $EO = OD = 3.25$  CM

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

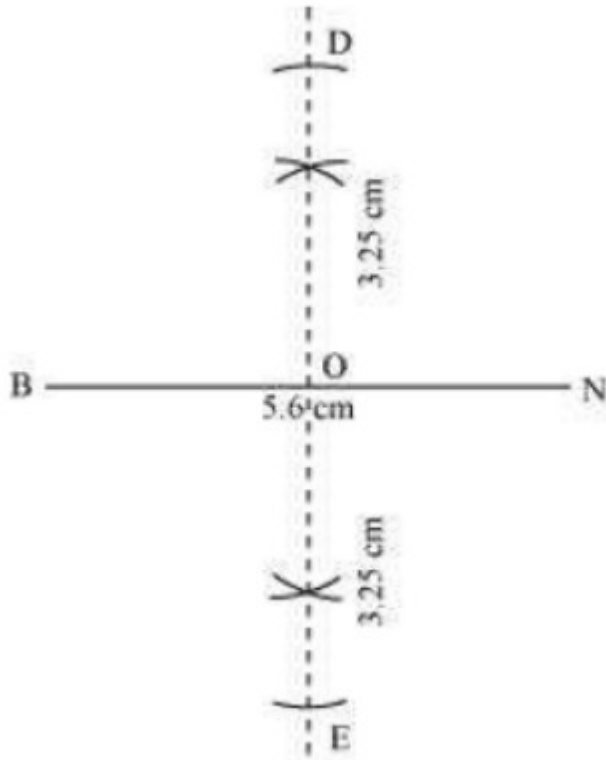


(1) Draw a line segment BN of 5.6 cm and also draw its perpendicular bisector. Let it intersect the line segment BN at point O.

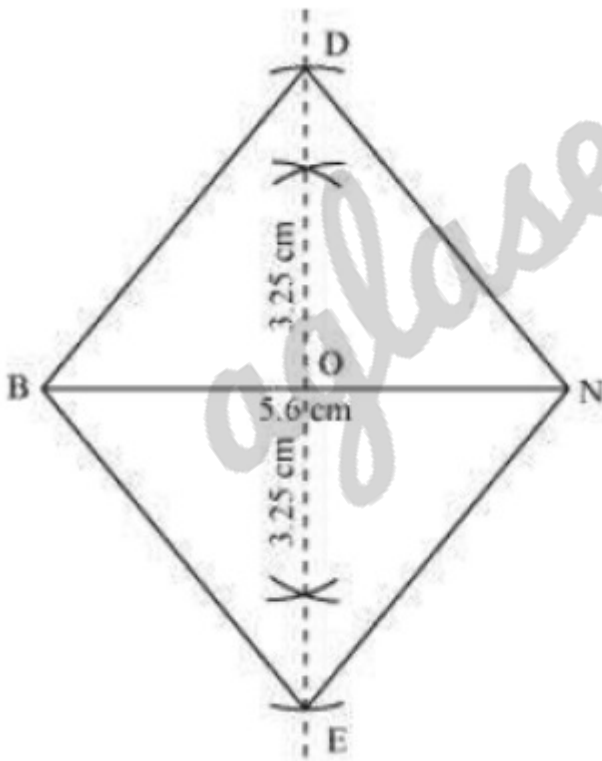


(2) Taking O as centre, draw arcs of 3.25 cm radius to intersect the perpendicular bisector at point D and E.





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



BEND is the required quadrilateral.

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**Exercise 4.3**

Q1 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

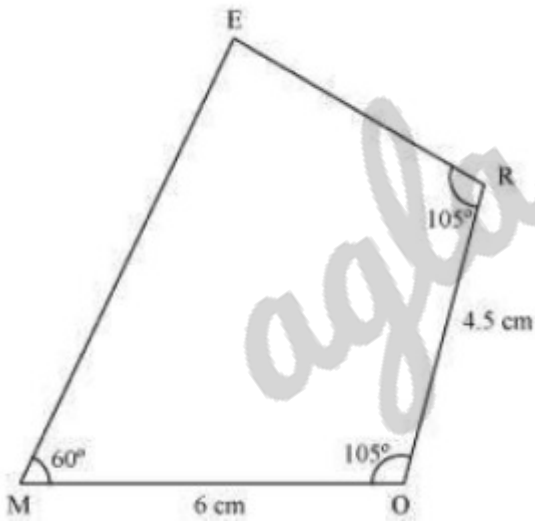
$\angle R = 85^\circ$

(iv) Rectangle OKAY

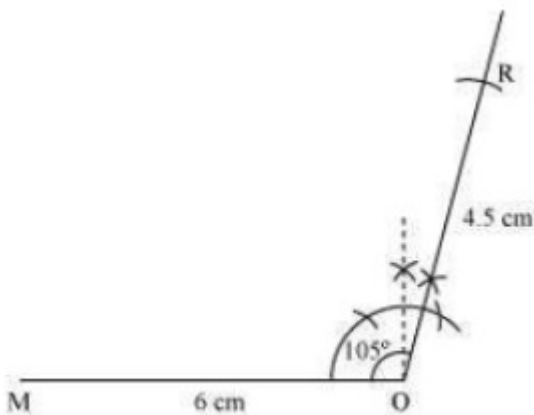
OK = 7 cm

KA = 5 cm

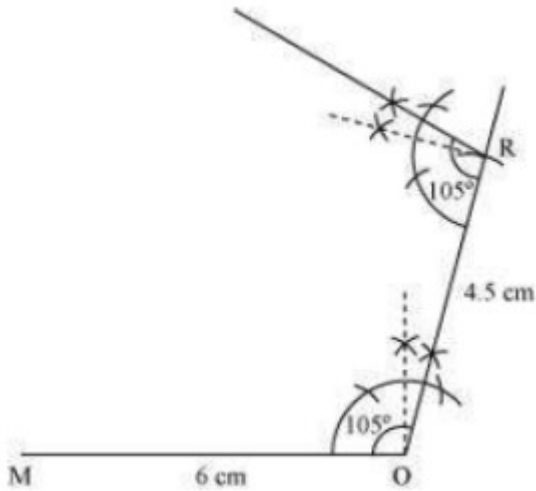
Answer. (i) (1) A rough sketch of this quadrilateral can be drawn as follows.



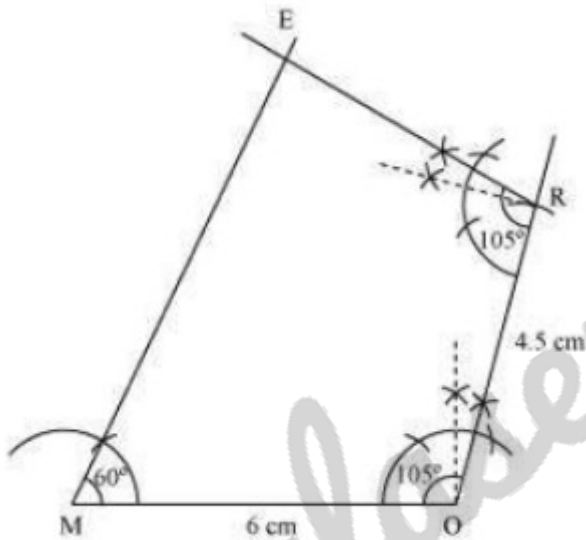
(2) Draw a line segment MO of 6 cm and an angle of  $105^\circ$  at point O. As vertex R is 4.5 cm away from the vertex O, cut a line segment OR of 4.5 cm from this ray.



(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.



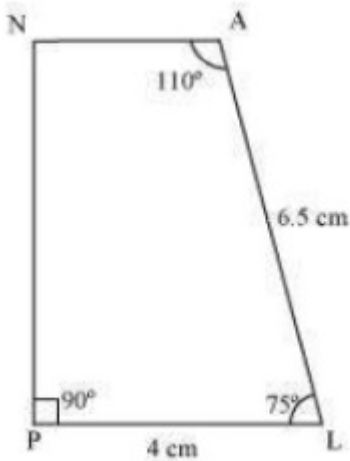
MORE is the required quadrilateral.

(ii) (1) The sum of the angles of a quadrilateral is  $360^\circ$   
 In quadrilateral PLAN,  $\angle P + \angle L + \angle A + \angle N = 360^\circ$   
 $90^\circ + \angle L + 110^\circ + 85^\circ = 360^\circ$

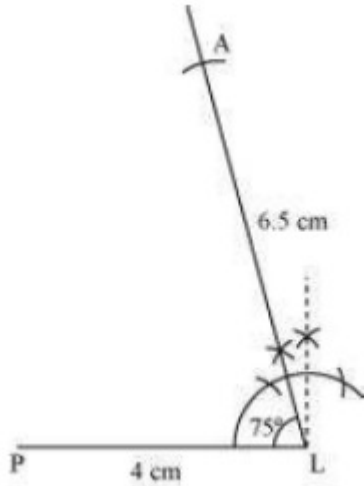
$$285^\circ + \angle L = 360^\circ$$

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

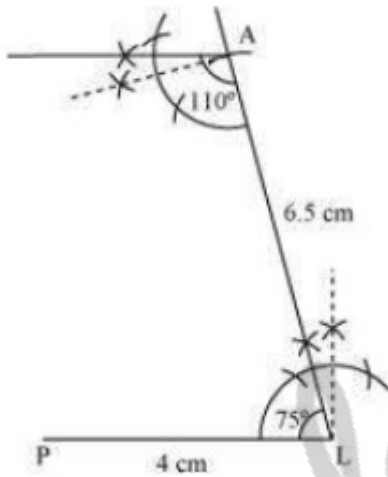
(2) A rough sketch of this quadrilateral is as follows.



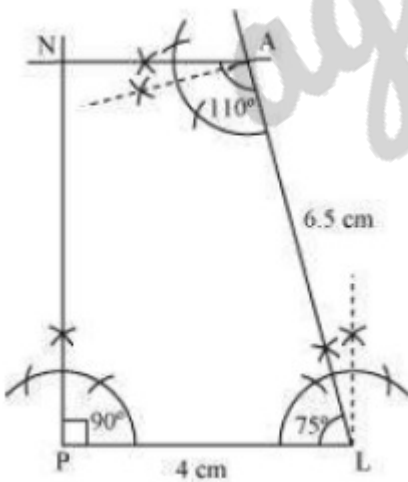
(3) Draw a line segment PL of 4 cm and draw an angle of  $75^\circ$  at point L. As vertex A is 6.5 cm away from vertex L, cut a line segment LA of 6.5 cm from this ray.



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

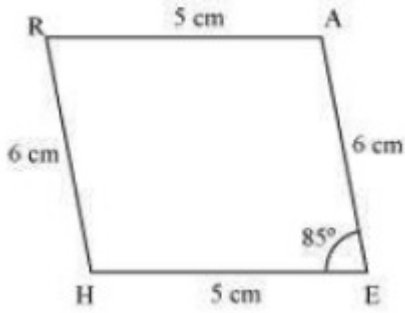


(5) Draw an angle of  $90^\circ$  at point P. This ray will meet the previously drawn ray from A at point N.

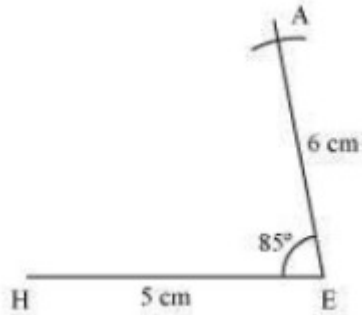


PLAN is the required quadrilateral.

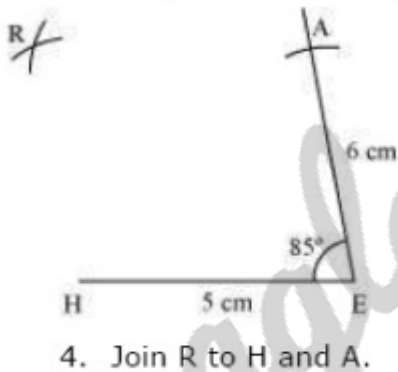
(iii) (1) Firstly, a rough sketch of this quadrilateral is as follows.



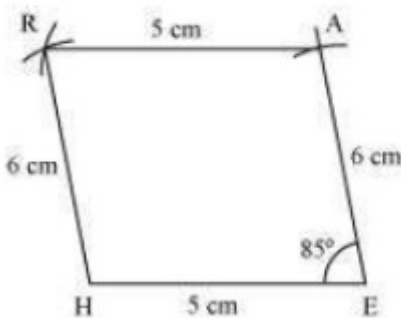
(2) Draw a line segment HE of 5 cm and an angle of 85° at point E. As vertex A is 6 cm away from vertex E, cut a line segment EA of 6 cm from this ray.



(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.

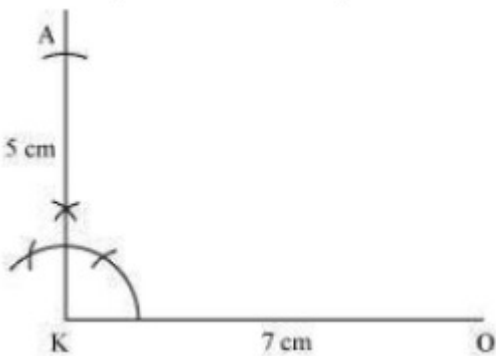


HEAR is the required quadrilateral.

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



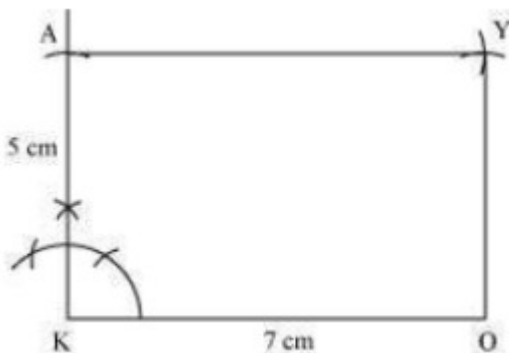
(2) Draw a line segment OK of 7 cm and angle of  $90^\circ$  at point K. As vertex A is 5 cm away from vertex K, cut a line segment KA of 5 cm from this ray.



(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.

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## Exercise 4.4

Q1 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

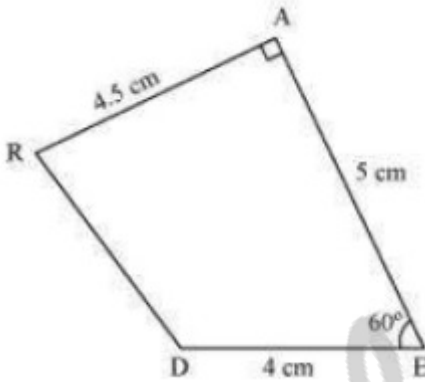
RU = 3 cm

UE = 4 cm

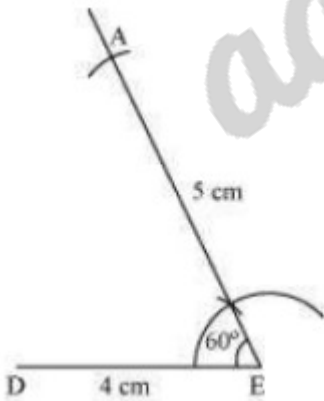
$\angle R = 75^\circ$

$\angle U = 120^\circ$

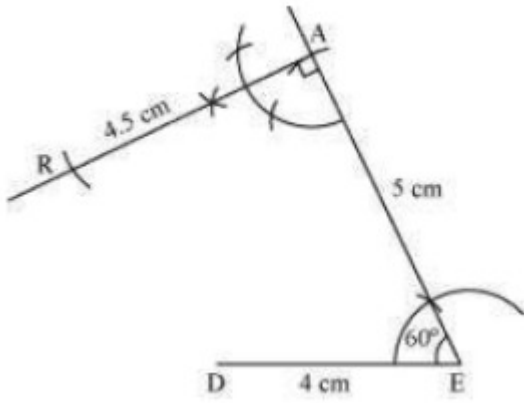
Answer. (i) (1) A rough sketch of this quadrilateral can be drawn as follows.



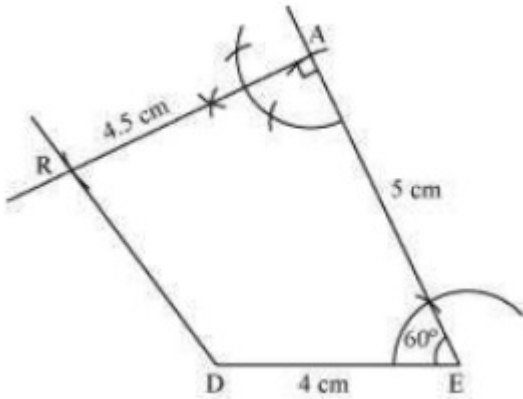
(2) Draw a line segment DE of 4 cm and an angle of  $60^\circ$  at point E. As vertex A is 5 cm away from vertex E, cut a line segment EA of 5 cm from this ray.



(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.

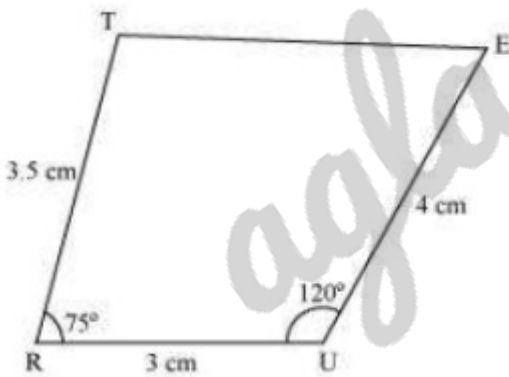


(4) Join D to R.

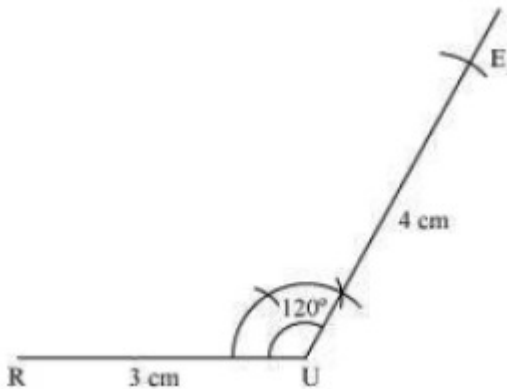


DEAR is the required quadrilateral.

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

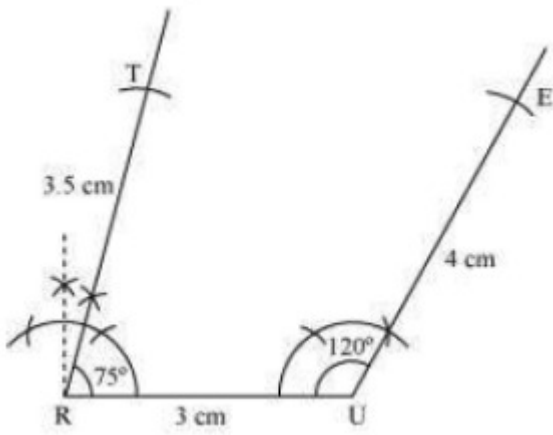


(2) Draw a line segment RU of 3 cm and angle of  $120^\circ$  at point U. As vertex E is 4 cm away from vertex U, cut line segment UE of 4 cm from this ray.

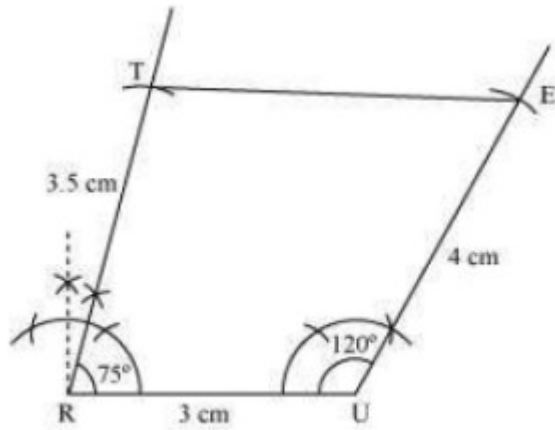


(3) Next, draw an angle of  $75^\circ$  at point R. As vertex T is 3.5 cm away from vertex R, cut a line segment RT of 3.5 cm from this ray.





(4) Join T to E.



TRUE is the required quadrilateral.

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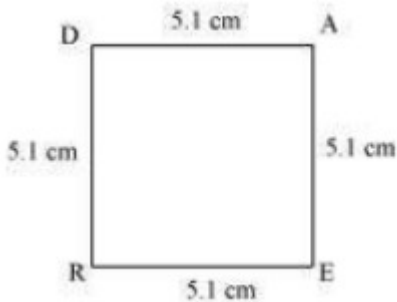
### Exercise 4.5

Q1 Draw the following.

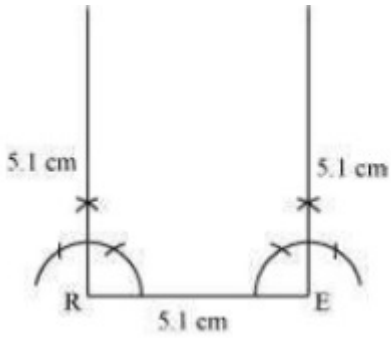
The square READ with  $RE = 5.1$  cm.

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.

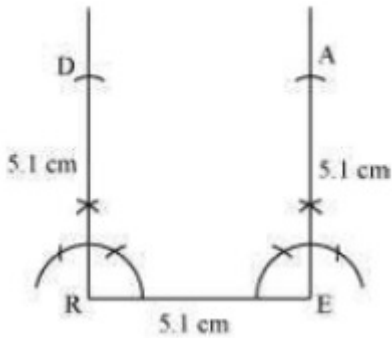
(1) A rough sketch of this square READ can be drawn as follows.



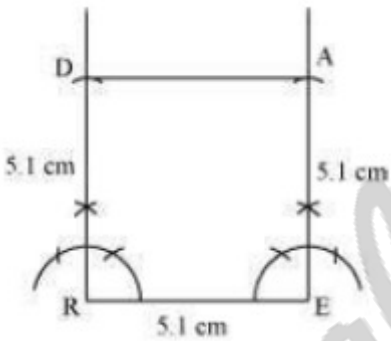
(2) Draw a line segment RE of 5.1 cm and an angle of  $90^\circ$  at point R and E.



(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.

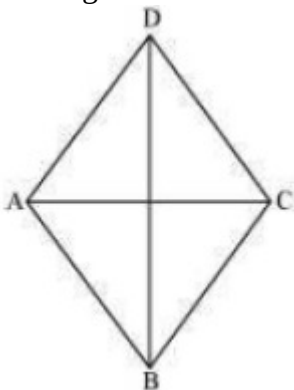
Page : 68 , Block Name : Exercise 4.5

Q2 Draw the following.

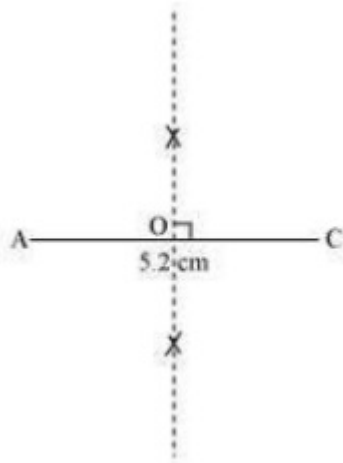
A rhombus whose diagonals are 5.2 cm and 6.4 cm long.

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

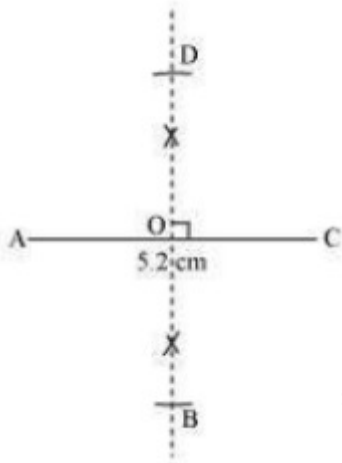
(1) A rough sketch of this rhombus ABCD is as follows.



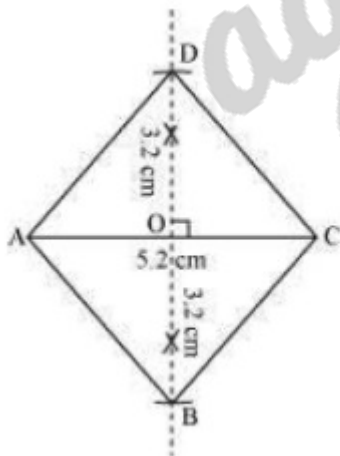
(2) Draw a line segment AC Of 5.2 cm and draw its perpendicular bisector. Let it intersect the line segment AC at point O.



(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.

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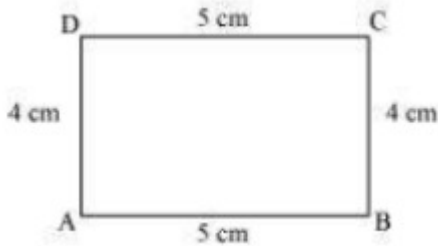
Q3 Draw the following.

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

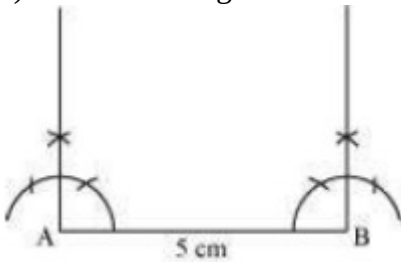
Answer. Opposite sides of a rectangle have their lengths as same measure and also. All the interior

angles of a rectangle are of  $90^\circ$  measure. The given rectangle ABCD may be drawn as follows.

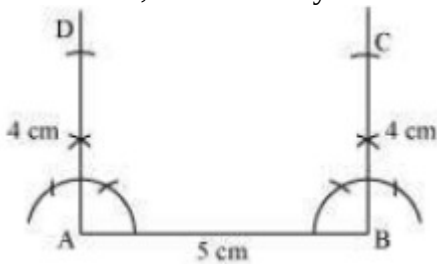
(1) A rough sketch of this rectangle ABCD can be drawn as follows.



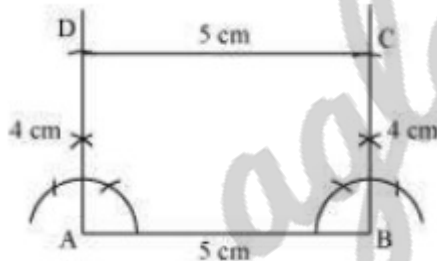
(2) Draw a line segment AB of 5 cm and an angle of  $90^\circ$  at point A and B.



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



(4) Join D to C.



ABCD is the required rectangle.

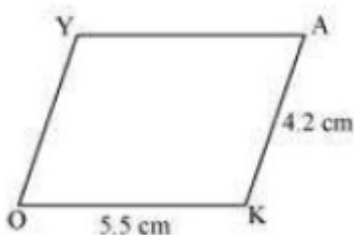
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Q4 Draw the following.

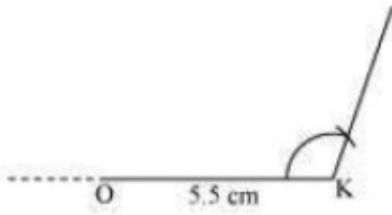
A parallelogram OKAY where  $OK = 5.5$  cm and  $KA = 4.2$  cm. Is it unique?

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

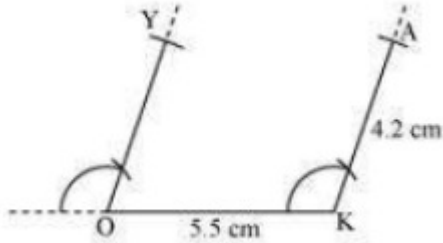
(1) A rough sketch of this parallelogram OKAY is drawn as follows.



(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 the segments  $KA$  and  $OY$ , each of  $4.2$  cm, from these rays.



$OKAY$  is the required rectangle.

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