

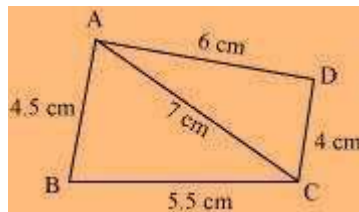
Exercise 4.1

1. Construct the following quadrilaterals.

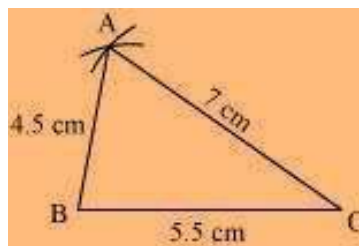
- (i) Quadrilateral ABCD
- AB = 4.5 cm
- BC = 5.5 cm
- CD = 4 cm
- AD = 6 cm
- AC = 7 cm

Solution:

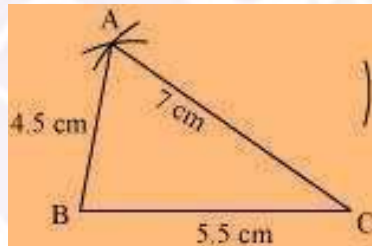
The rough sketch of the quadrilateral ABCD can be drawn as follows.



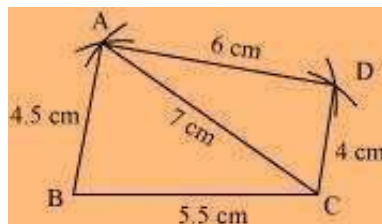
(1) $\triangle ABC$ can be constructed by using the given measurements as follows.



(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.



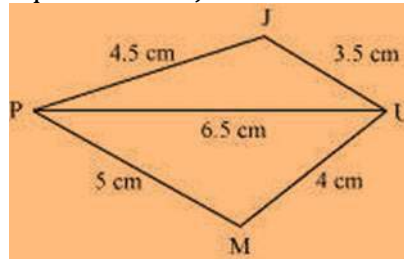
ABCD is the required quadrilateral.

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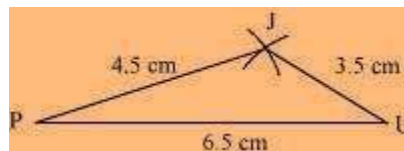
(ii) Quadrilateral
JUMP $JU = 3.5$ cm
 $UM = 4$ cm
 $MP = 5$ cm
 $PJ = 4.5$ cm
 $PU = 6.5$ cm

Solution:

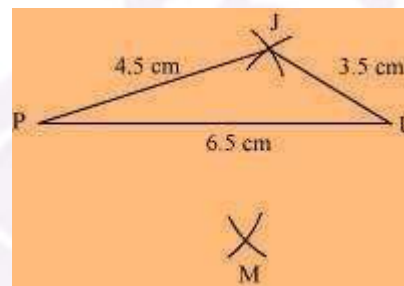
The rough sketch of the quadrilateral JUMP can be drawn as follows.



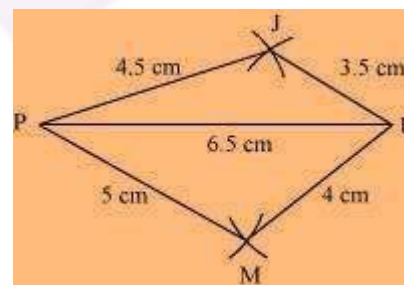
(1) ΔJUP can be constructed by using the given measurements as follows.



(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) Parallelogram MORE
 $OR = 6$ cm

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$$RE = 4.5 \text{ cm}$$

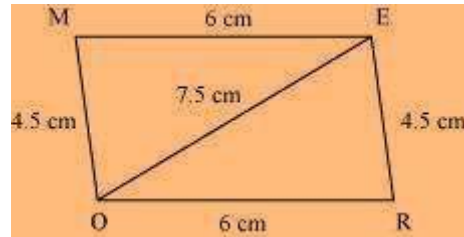
$$EO = 7.5$$

Solution:

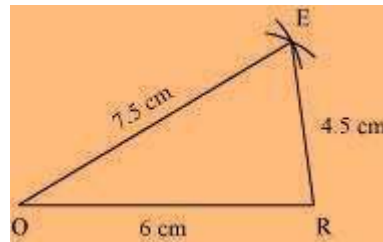
We know that opposite sides of a parallelogram are equal in length and also these are parallel to each other.

$$\text{i.e., } ME = OR, MO = ER$$

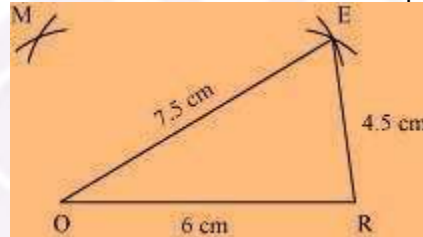
The rough sketch of the parallelogram MORE can be drawn as follows.



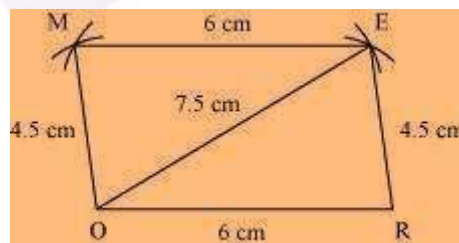
(1) ΔEOR can be constructed by using the given measurements as follows.



(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) Rhombus BEST

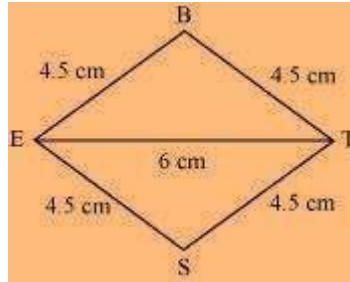
$$BE = 4.5 \text{ cm}$$

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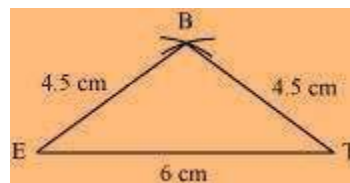
$$ET = 6 \text{ cm}$$

Solution:

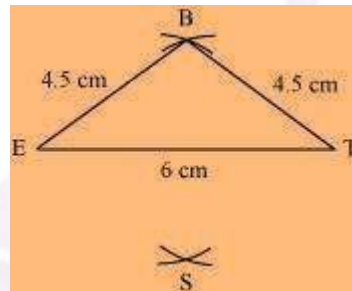
We know that all sides of a rhombus are of the same measure. Hence, $BE = ES = ST = TB$
The rough sketch of the rhombus BEST can be drawn as follows.



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

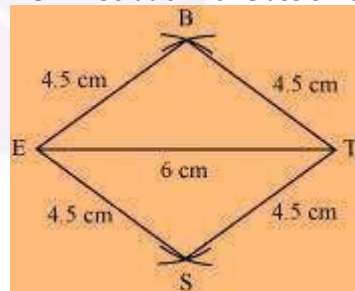


(2) Vertex S is 4.5 cm away from vertex E and also from vertex T. Therefore, while taking E and T as centres, draw arcs of 4.5 cm radius, which will be intersecting each other at point S.



(3) Join S to E and T.

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BEST is the required rhombus.

Exercise 4.2

1. Construct the following quadrilaterals.

(i) Quadrilateral

LIFT LI = 4 cm

IF = 3 cm

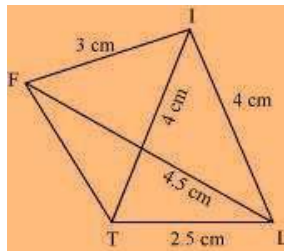
TL = 2.5 cm

LF = 4.5 cm

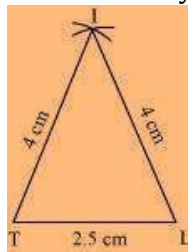
IT = 4 cm

Solution:

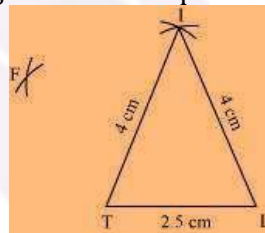
A rough sketch of the quadrilateral LIFT can be drawn as follows.



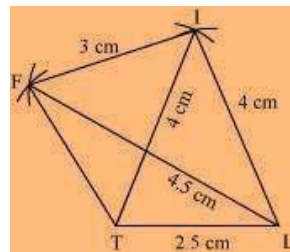
(1) ΔITL can be constructed by using the given measurements as follows.



(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.



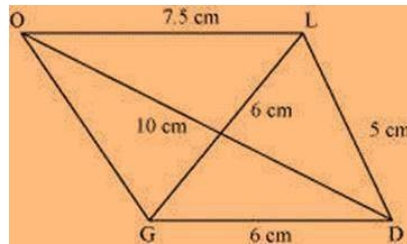
LIFT is the required quadrilateral.

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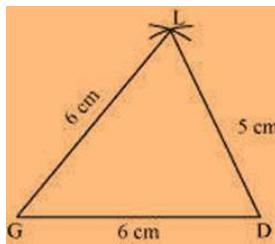
(ii) Quadrilateral
GOLD $OL = 7.5$ cm
 $GL = 6$ cm
 $GD = 6$ cm
 $LD = 5$ cm
 $OD = 10$ cm

Solution:

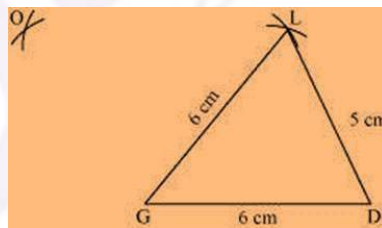
The rough sketch of the quadrilateral GOLD can be drawn as follows.



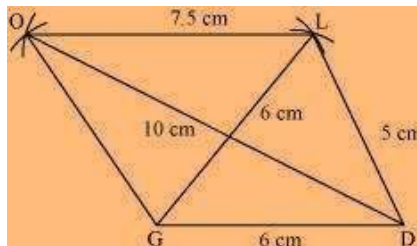
(1) $\triangle GDL$ can be constructed by using the given measurements as follows.



(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.

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(iii) Rhombus BEND

BN = 5.6 cm

DE = 6.5 cm

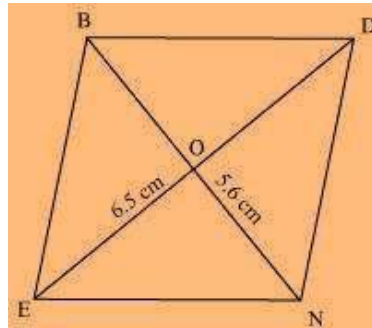
Solution:

We know that the diagonals of a rhombus always bisect each other at 90° .

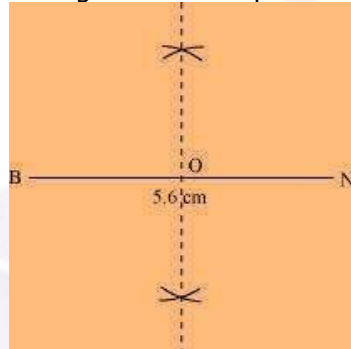
Let us assume that these are intersecting each other at point O in this rhombus.

Hence, $EO = OD = 3.25$ cm

The rough sketch of the rhombus BEND can be drawn as follows.

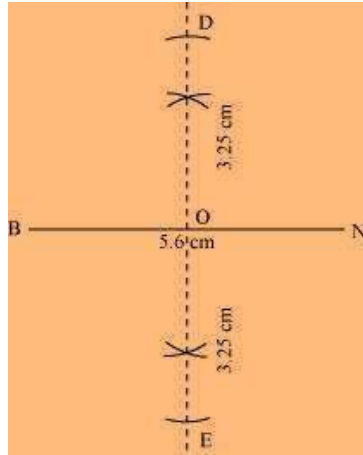


- (1) Draw a line segment BN of 5.6 cm and also draw its perpendicular bisector. Let it intersect the line segment BN at point O.

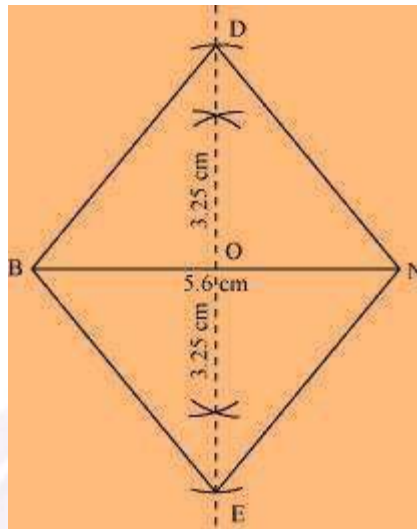


- (2) Taking O as centre, draw arcs of 3.25 cm radius to intersect the perpendicular bisector at point D and E.

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



BEND is the required quadrilateral.

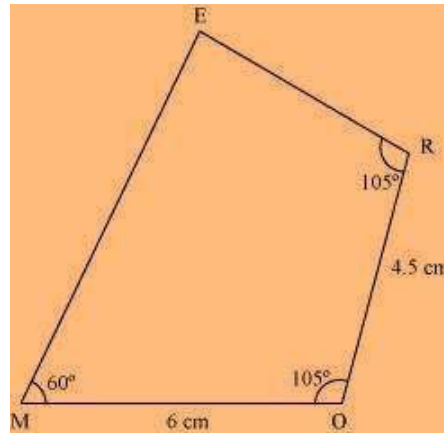
Exercise 4.3

1. Construct the following quadrilaterals.

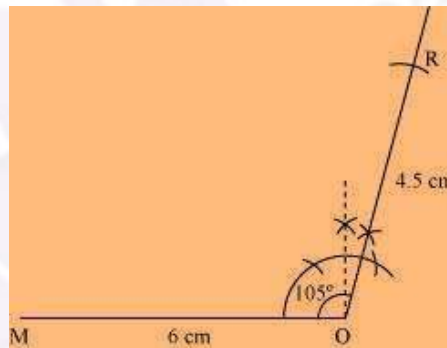
- (i) Quadrilateral MORE
- MO = 6 cm
- OR = 4.5 cm
- $\angle M = 60^\circ$
- $\angle O = 105^\circ$
- $\angle R = 105^\circ$

Solution:

Rough Figure:

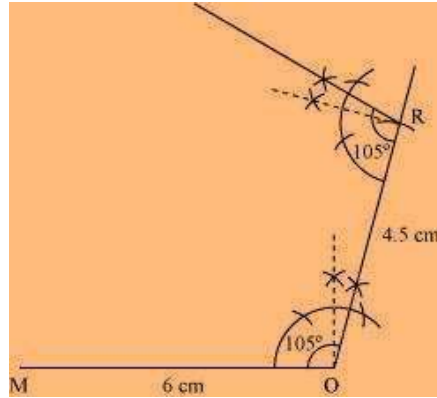


(1) Draw a line segment MO of 6 cm and an angle of 105° at point O. As vertex R is 4.5 cm away from the vertex O, cut a line segment OR of 4.5 cm from this ray.

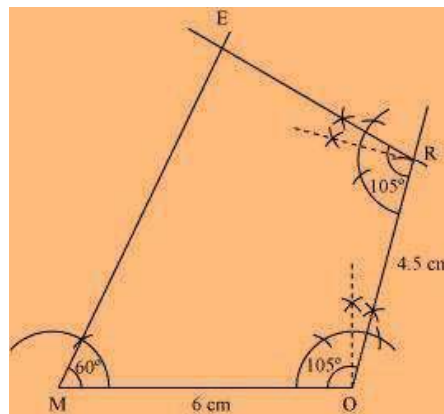


(2) Again, draw an angle of 105° at point R.

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(3) Draw an angle of 60° at point M. Let this ray meet the previously drawn ray from R at point E.



MORE is the required quadrilateral.

(ii) Quadrilateral

PLAN PL = 4 cm

LA = 6.5 cm

$\angle P = 90^\circ$

$\angle A = 110^\circ$

$\angle N = 85^\circ$

Solution:

The sum of the angles of a quadrilateral is 360° .

In quadrilateral PLAN,

$$\angle P + \angle L + \angle A + \angle N = 360^\circ$$

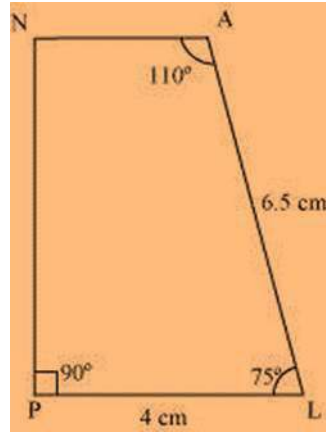
$$90^\circ + \angle L + 110^\circ + 85^\circ = 360^\circ$$

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

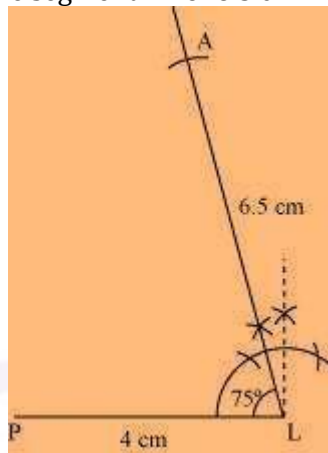
$$\angle L = 360^\circ - 285^\circ = 75^\circ$$

Rough Figure:

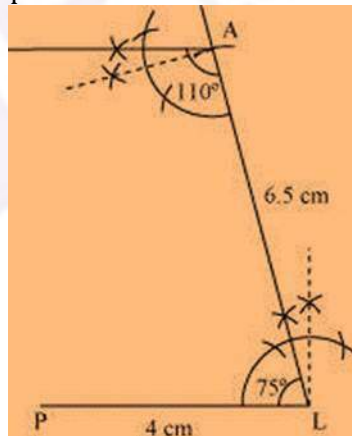
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(1) Draw a line segment PL of 4 cm and draw an angle of 75° at point L. As vertex A is 6.5 cm away from vertex L, cut a line segment LA of 6.5 cm from this ray.

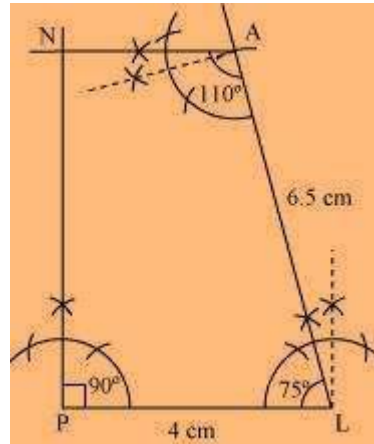


(2) Again draw an angle of 110° at point A.



(3) Draw an angle of 90° at point P. This ray will meet the previously drawn ray from A at point N.

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PLAN is the required quadrilateral.

(iii) Parallelogram

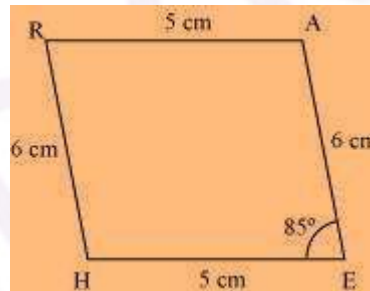
HEAR HE = 5 cm

EA = 6 cm

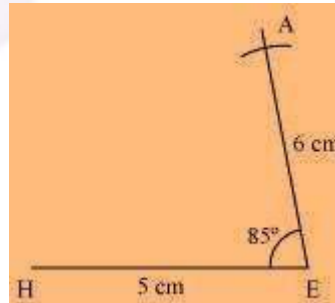
$\angle R = 85^\circ$

Solution:

Rough Figure:

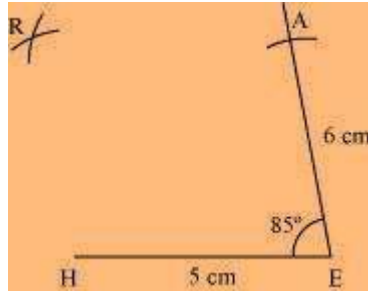


(1) Draw a line segment HE of 5 cm and an angle of 85° at point E. As vertex A is 6 cm away from vertex E, cut a line segment EA of 6 cm from this ray.

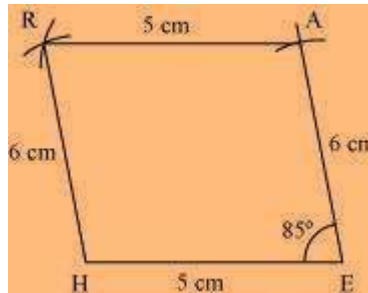


(2) Vertex R is 6 cm and 5 cm away from vertex H and A respectively. By taking radius as 6 cm and 5 cm, draw arcs from point H and A respectively. These will be intersecting each other at point R.

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(3) Join R to H and A.



HEAR is the required quadrilateral.

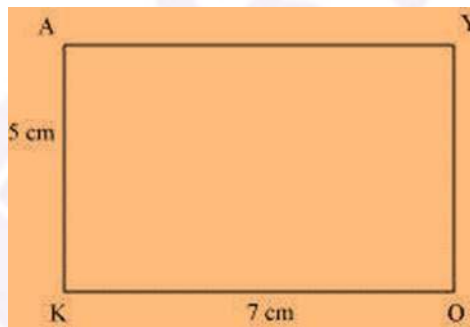
(iv) Rectangle OKAY

OK = 7 cm

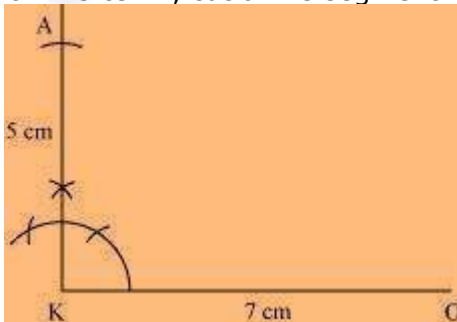
KA = 5 cm

Solution:

Rough Figure:



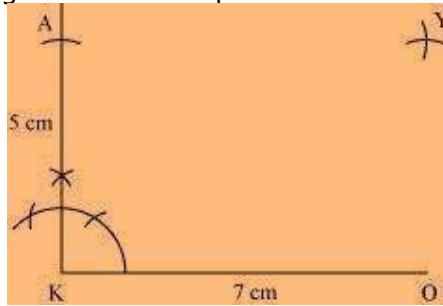
(1) Draw a line segment OK of 7 cm and an angle of 90° at point K. As vertex A is 5 cm away from vertex K, cut a line segment KA of 5 cm from this ray.



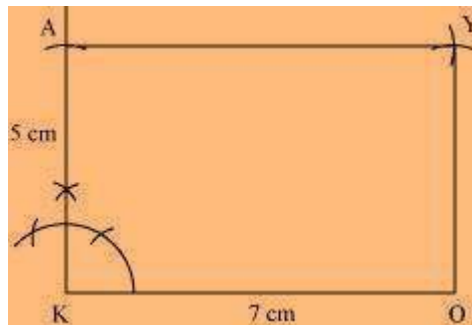
(2) Vertex Y is 5 cm and 7 cm away from vertex O and A respectively. By taking

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radius as 5 cm and 7 cm, draw arcs from point O and A respectively. These will be intersecting each other at point Y.



(3) Join Y to A and O.



OKAY is the required quadrilateral.

Exercise 4.4

1. Construct the following quadrilaterals,

(i) Quadrilateral

DEAR DE = 4 cm

EA = 5 cm AR

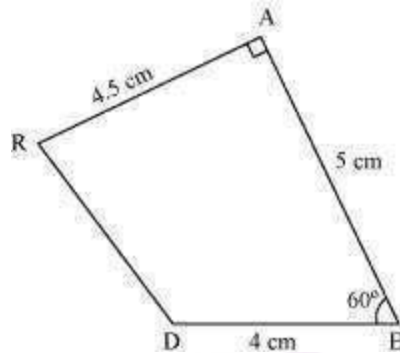
= 4.5 cm

$\angle E = 60^\circ$

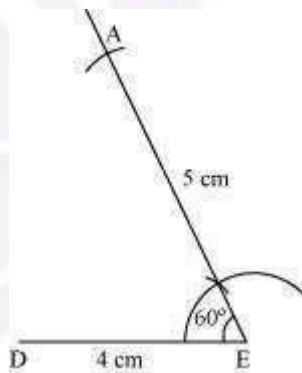
$\angle A = 90^\circ$

Solution:

Rough Figure:

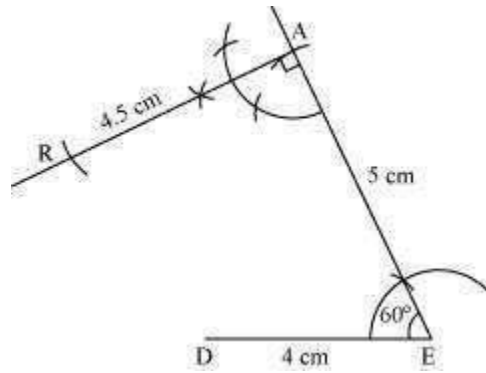


(1) Draw a line segment DE of 4 cm and an angle of 60° at point E. As vertex A is 5 cm away from vertex E, cut a line segment EA of 5 cm from this ray.

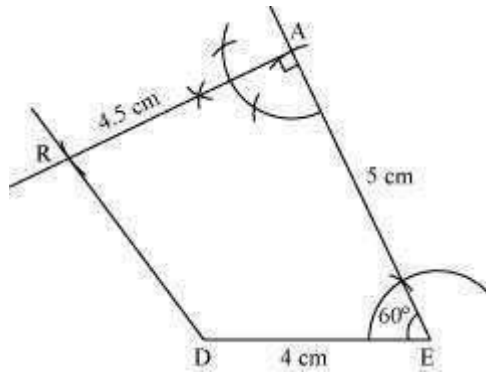


(2) Again draw an angle of 90° at point A. As vertex R is 4.5 cm away from vertex A, cut a line segment RA of 4.5 cm from this ray.

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(3) Join D to R.



DEAR is the required quadrilateral.

(ii) Quadrilateral

TRUE $TR = 3.5$ cm

$RU = 3$ cm

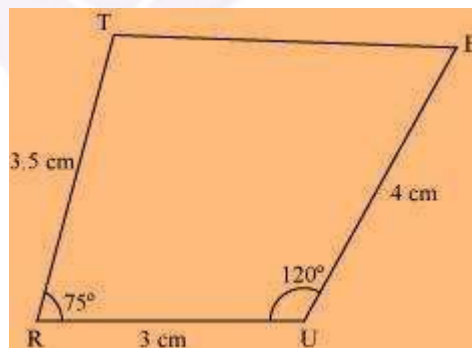
$UE = 4$ cm

$\angle R = 75^\circ$

$\angle U = 120^\circ$

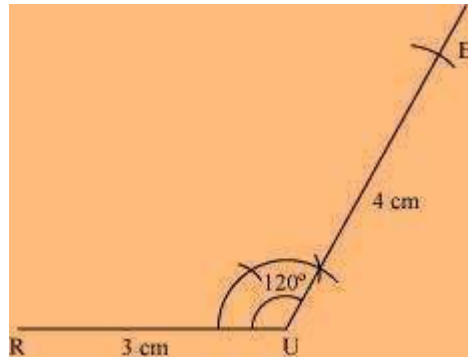
Solution:

Rough Figure:

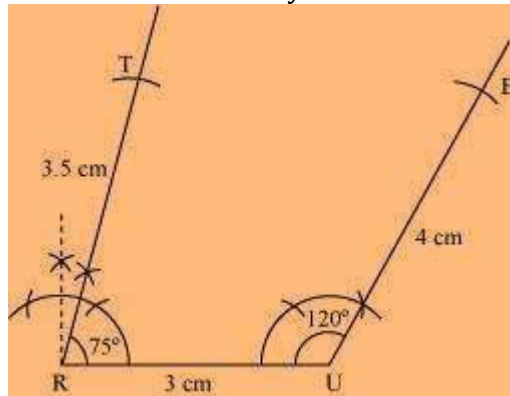


(1) Draw a line segment RU of 3 cm and an angle of 120° at point U. As vertex E is 4 cm away from vertex U, cut a line segment UE of 4 cm from this ray.

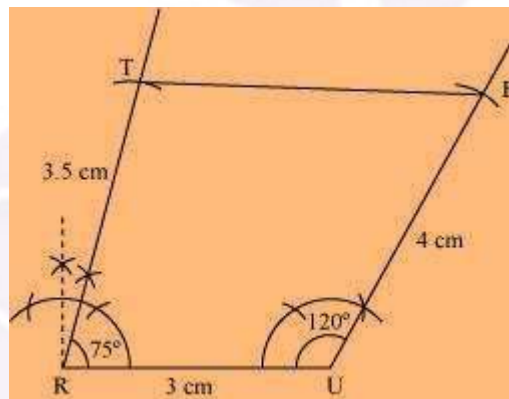
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(2) Next, draw an angle of 75° at point R. As vertex T is 3.5 cm away from vertex R, cut a line segment RT of 3.5 cm from this ray.



(3) Join T to E.



TRUE is the required quadrilateral.

Exercise 4.5

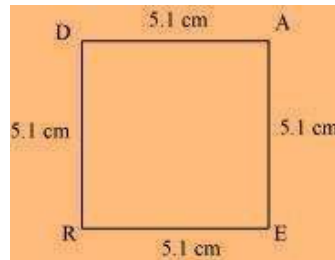
Draw the following:

1. The square READ with $RE = 5.1$ cm

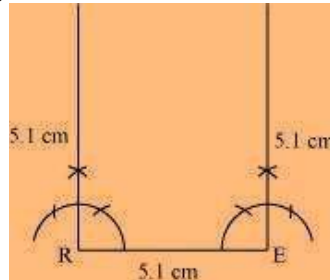
Solution:

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

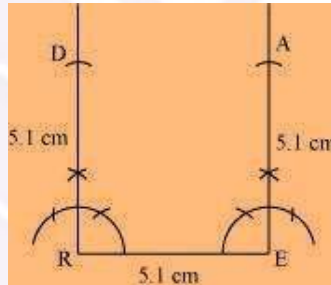
Rough Figure:



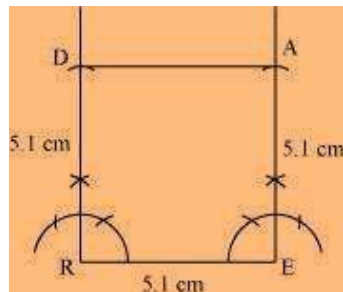
(1) Draw a line segment RE of 5.1 cm and an angle of 90° at point R and E.



(2) 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.



(3) Join D to A.



READ is the required square.

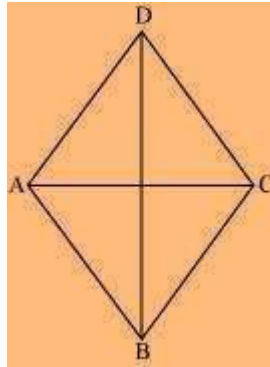
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2. A rhombus whose diagonals are 5.2 cm and 6.4 cm long.

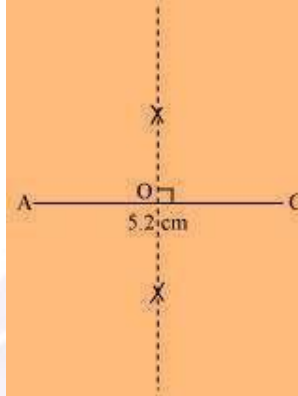
Solution:

In a rhombus, diagonals bisect each other at 90° . \therefore , the given rhombus ABCD can be drawn as follows.

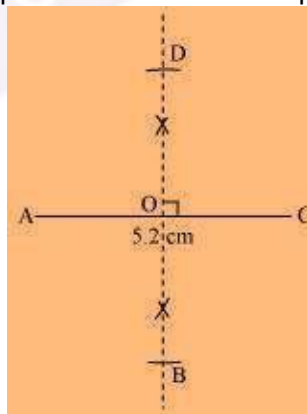
Rough Figure:



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

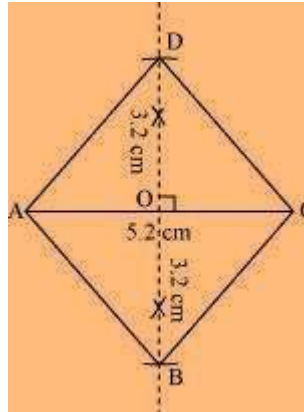


(2) Draw arcs of $6.4/2 = 3.2$ on both sides of this perpendicular bisector. Let the arcs intersect the perpendicular bisector at point B and D.



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



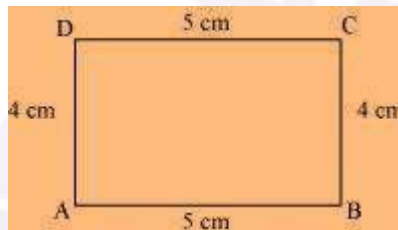
ABCD is the required rhombus.

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

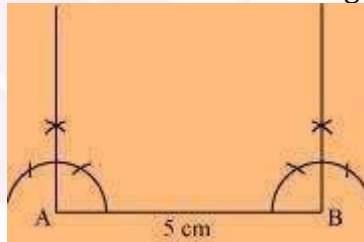
Solution:

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

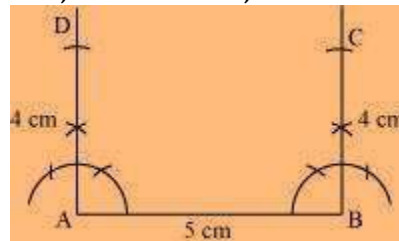
Rough figure:



(1) Draw a line segment AB of 5 cm and an angle of 90° at point A and B.

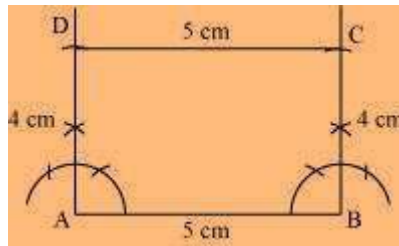


(2) As vertex C and D are 4 cm away from vertex B and A respectively, cut line segments AD and BC, each of 4 cm, from these rays.



NCERT Solution For Class 8 Maths Chapter 4- Practical Geometry

(3) Join D to C.



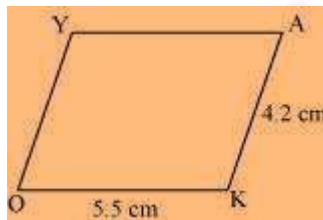
ABCD is the required rectangle.

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

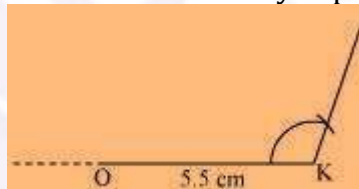
Solution:

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

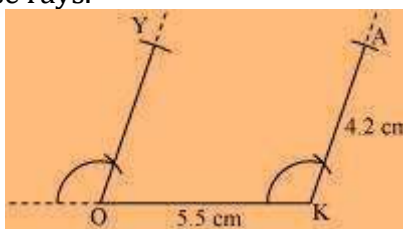
Rough Figure:



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

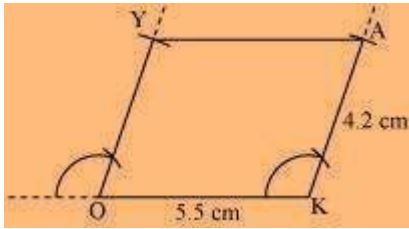


(2) Draw a ray at point O parallel to the ray at K. As the vertices, A and Y, are 4.2 cm away from the vertices K and O respectively, cut line segments KA and OY, each of 4.2 cm, from these rays.



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(3) Join Y to A.



OKAY is the required rectangle.

