NCERT Class 8 Chapter 4 – Practical Geometry

Exercise 4.1

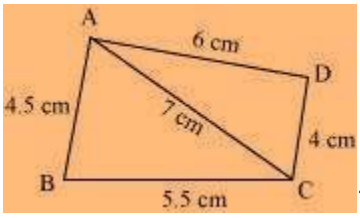
1. Construct the following quadrilaterals.

(i) Quadrilateral ABCD AB = 4.5 cm

BC = 5.5 cm

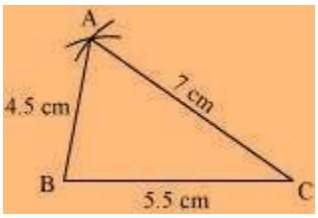
CD = 4 cm AD = 6 cm AC = 7 cm

Solution:

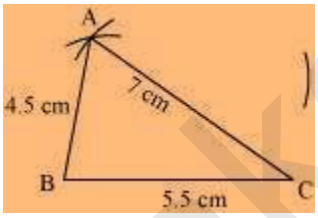


The rough sketch of the quadrilateral ABCD can be drawn as follows.

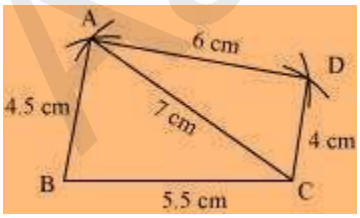
(1) ∆ABC can be constructed by using the given measurements as follows.



(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. Joint D to A and C.



ABCD is the required quadrilateral.

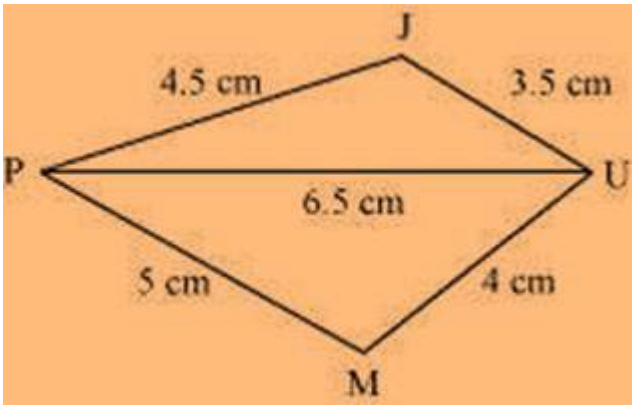
(ii) Quadrilateral JUMP JU = 3.5 cm

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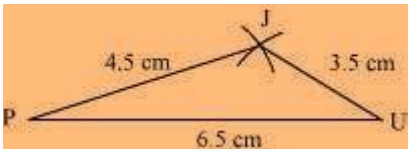
UM = 4 cm MP = 5 cm PJ = 4.5 cm PU = 6.5 cm

Solution:

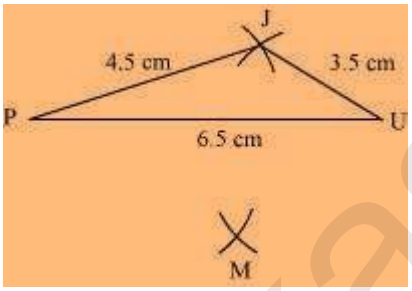
The rough sketch of the quadrilateral JUMP can be drawn as follows.



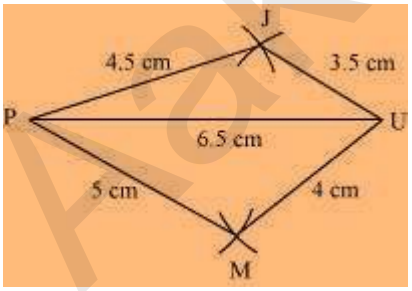
(1) Δ JUP can be constructed by using the given measurements as follows.



(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) Parallelogram MORE

OR = 6 cm

Solution:

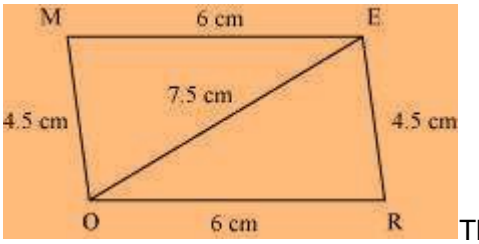
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RE = 4.5 cm

EO = 7.5

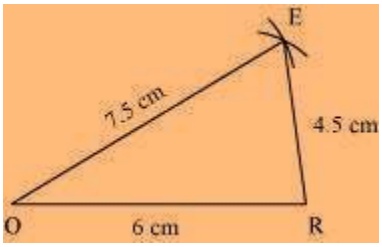
We know that opposite sides of a parallelogram are equal in length and also these are parallel to each other.

i.e., ME = OR, MO = ER

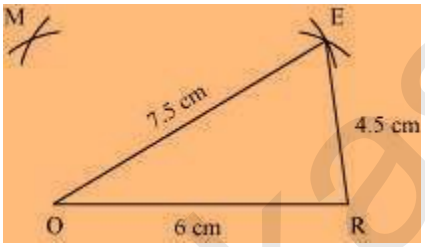


The rough sketch of the parallelogram MORE can be drawn as follows.

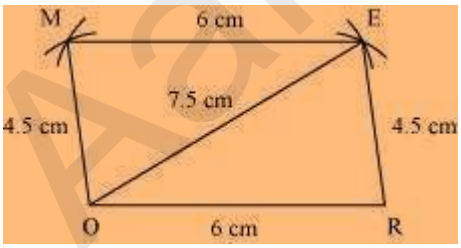
(1) Δ EOR can be constructed by using the given measurements as follows.



(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) Rhombus BEST

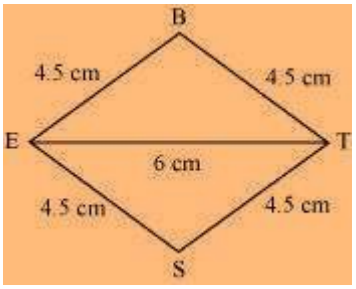
BE = 4.5 cm

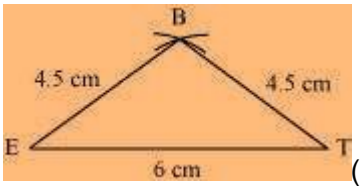
ET = 6 cm

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Solution:

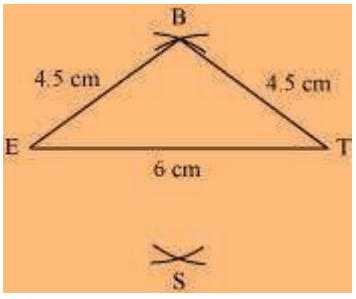
We know that all sides of a rhombus are of the same measure. Hence, BE = ES = ST = TB The rough sketch of the rhombus BEST can be drawn as follows.





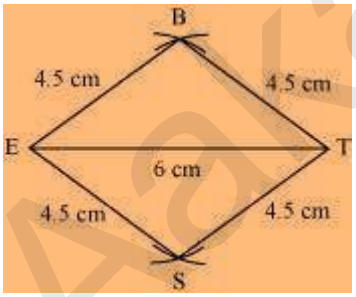
(1) ∆ BET can be constructed by using the given measurements as follows.

(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.

NCERT Solution For Class 8 Maths Chapter 4 Image



BEST is the required rhombus.

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Exercise 4.2

1. Construct the following quadrilaterals.

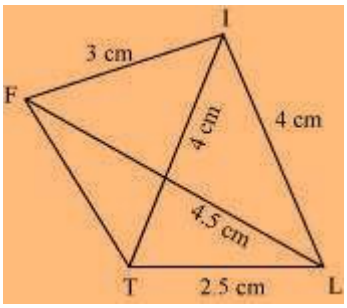
(i) Quadrilateral LIFT LI = 4 cm

IF = 3 cm TL = 2.5 cm LF = 4.5 cm

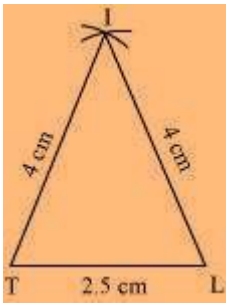
IT = 4 cm

Solution:

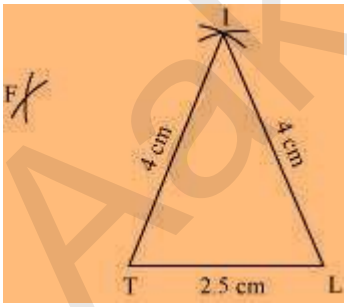
A rough sketch of the quadrilateral LIFT can be drawn as follows.



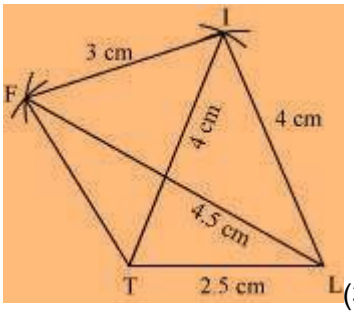
(1) ∆ ITL can be constructed by using the given measurements as follows.



(2) Vertex F is 4.5 cm away from vertex L and 3 cm away from vertex I. ∴, 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.



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

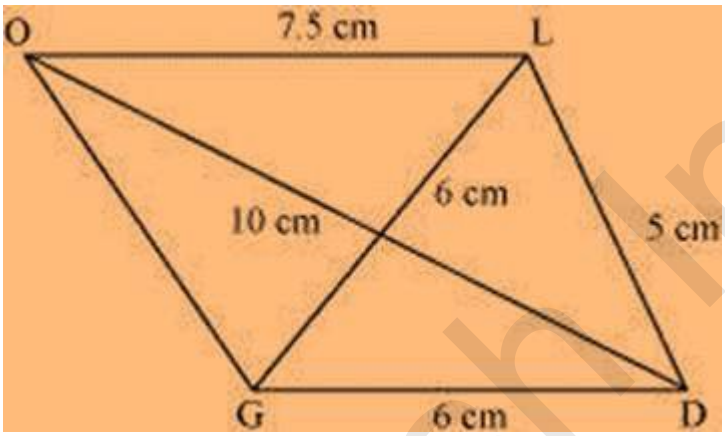
LIFT is the required quadrilateral.

(ii) Quadrilateral GOLD OL = 7.5 cm

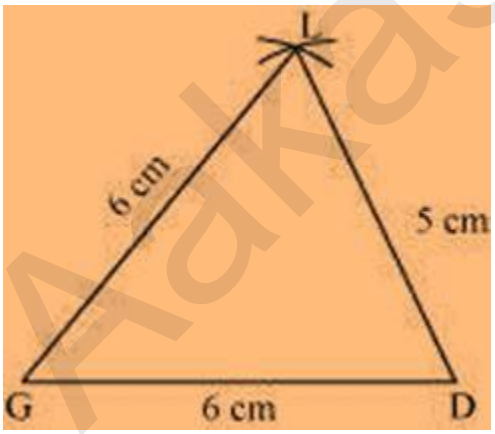
GL = 6 cm GD = 6 cm LD = 5 cm OD = 10 cm

Solution:

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

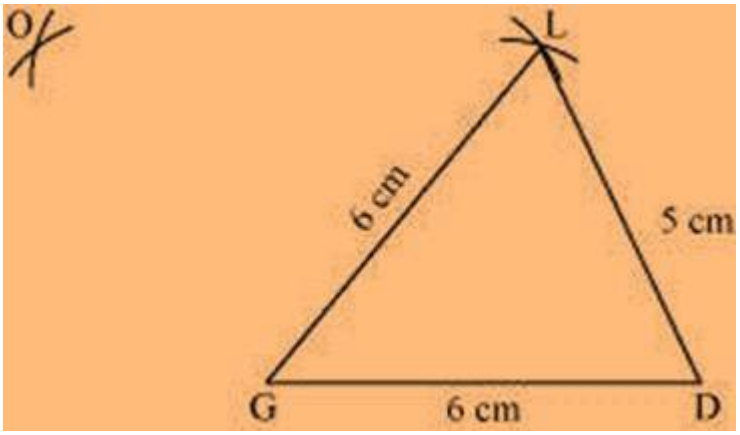


(1) ∆ GDL can be constructed by using the given measurements as follows.

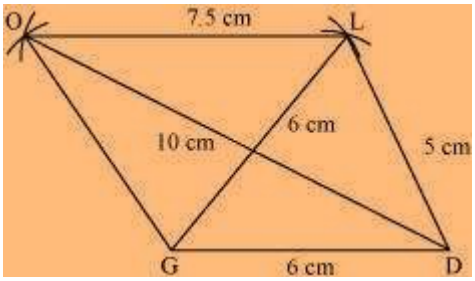


(2) Vertex O is 10 cm away from vertex D and 7.5 cm away from vertex L. Therefore, while taking D and L as centres, draw arcs of 10 cm radius and 7.5 cm radius respectively. These will intersect each other at point O.

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(3) Join O to G and L.



GOLD is the required quadrilateral.

(iii) Rhombus BEND

BN = 5.6 cm

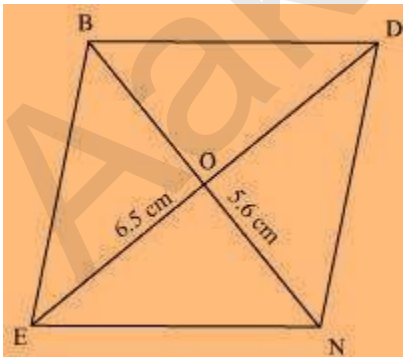
DE = 6.5 cm

Solution:

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

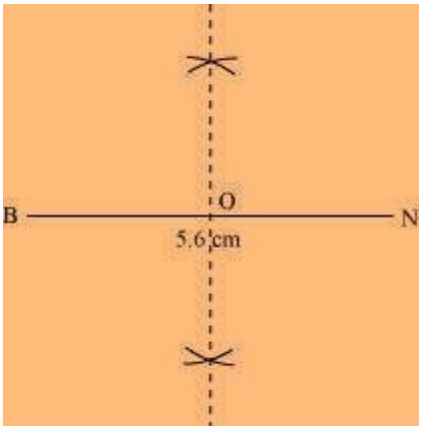
Let us assume that these are intersecting each other at point O in this rhombus. Hence, EO = OD = 3.25 cm

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

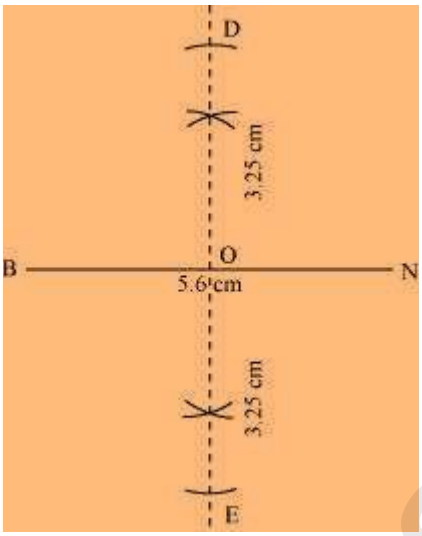


(1) Draw a line segment BN of 5.6 cm and also draw its perpendicular bisector. Let it intersect the line segment BN at point O.

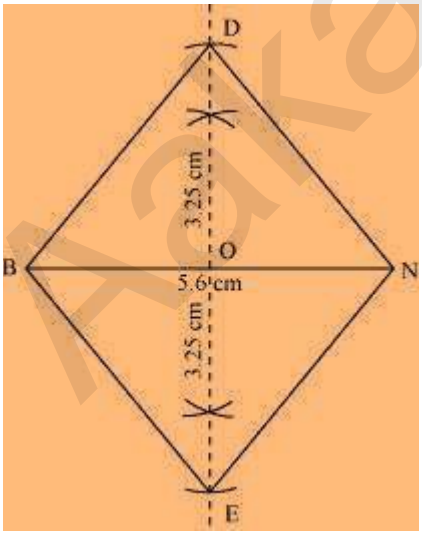
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(2) Taking O as centre, draw arcs of 3.25 cm radius to intersect the perpendicular bisector at point D and E.



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



BEND is the required quadrilateral.

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Exercise 4.3

1. Construct the following quadrilaterals.

(i) Quadrilateral MORE MO = 6 cm

OR = 4.5 cm

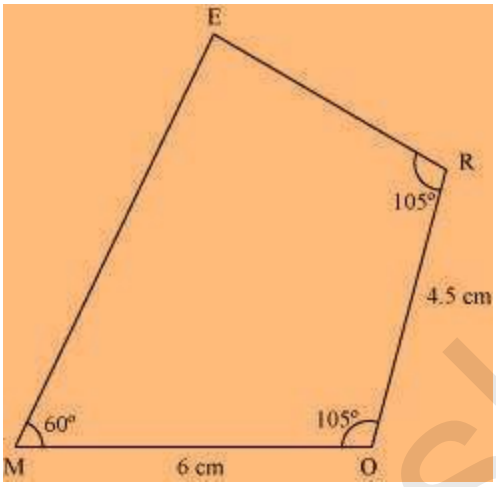
∠M = 60°

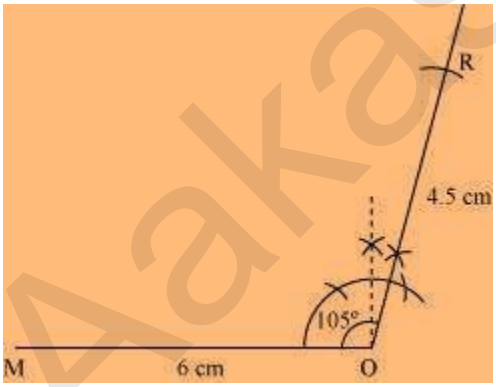
∠O = 105°

∠R = 105°

Solution:

Rough Figure:

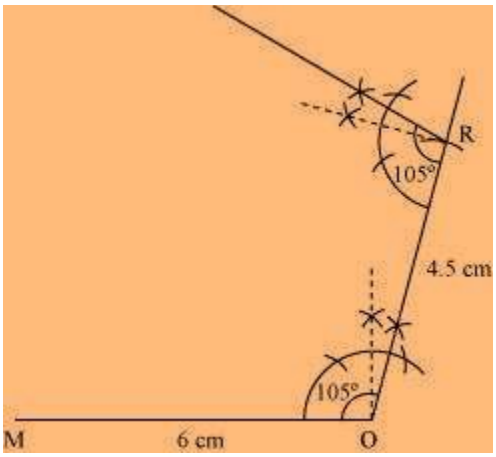




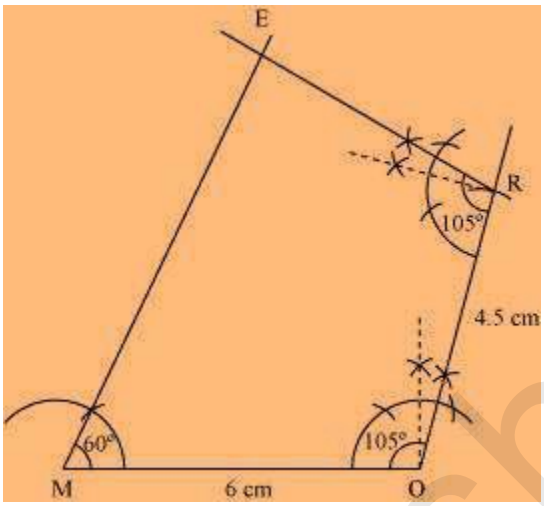
(1) Draw a line segment MO of 6 cm and an angle of 105º at point O. As vertex R is 4.5 cm away from the vertex O, cut a line segment OR of 4.5 cm from this ray.

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

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(3) Draw an angle of 60º 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

∠P = 90°

∠A = 110°

∠N = 85°

Solution:

The sum of the angles of a quadrilateral is 360°. In quadrilateral PLAN,

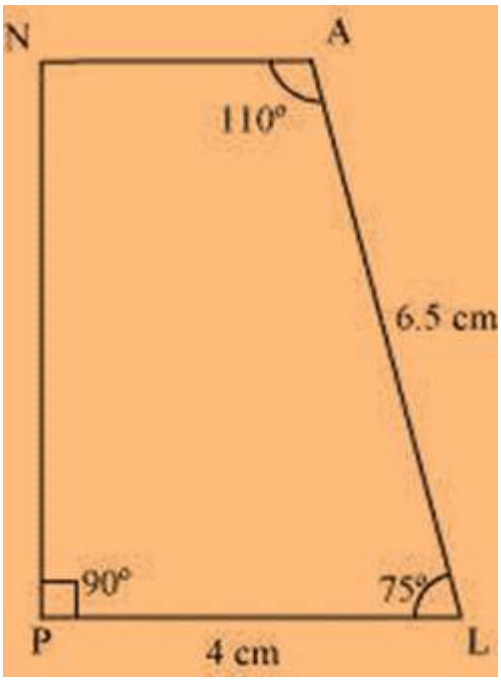
∠P + ∠L + ∠A + ∠N = 360° 90° + ∠L + 110° + 85° = 360°

285° + ∠L = 360°

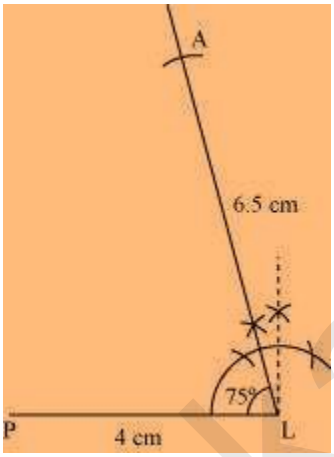
∠L = 360° − 285° = 75°

Rough Figure:

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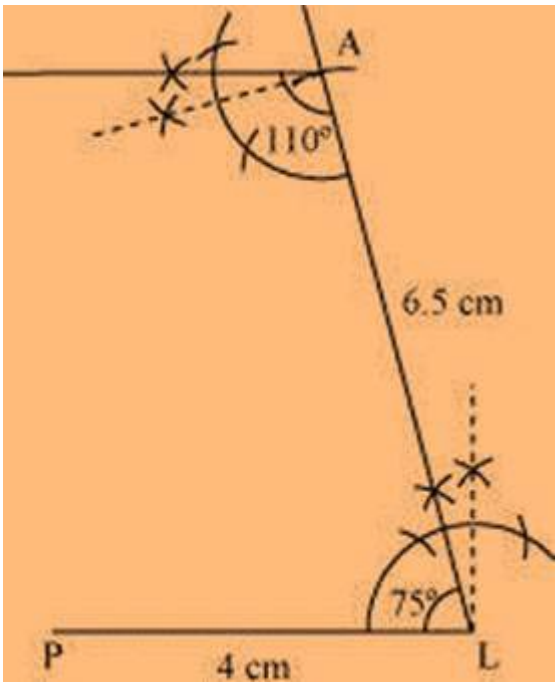


(1) Draw a line segment PL of 4 cm and draw an angle of 75º at point L. As vertex A is 6.5 cm away from vertex L, cut a line segment LA of 6.5 cm from this ray.

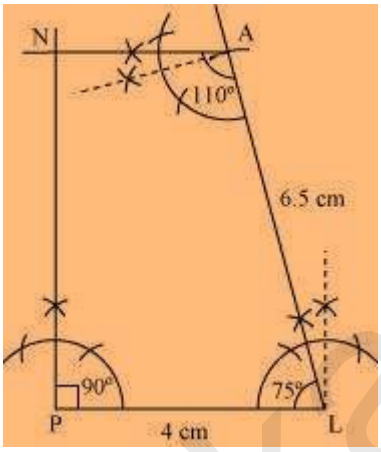


(2) Again draw an angle of 110º at point A.

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



PLAN is the required quadrilateral.

(iii) Parallelogram HEAR HE = 5 cm

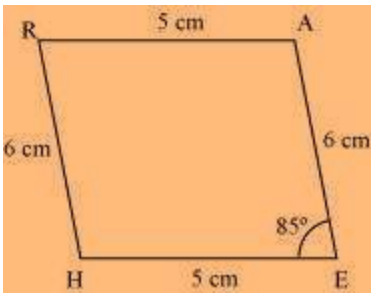
EA = 6 cm

∠R = 85°

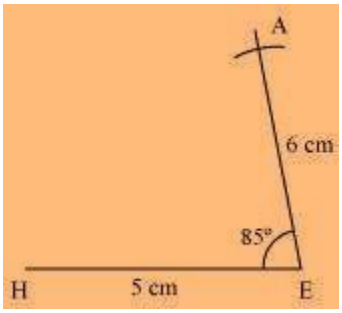
Solution:

Rough Figure:

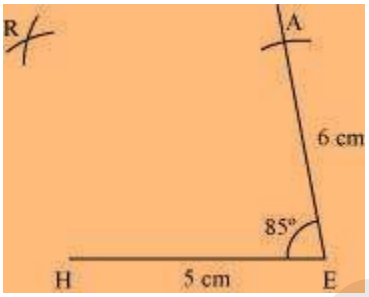
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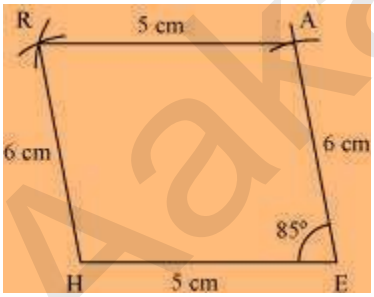
(1) Draw a line segment HE of 5 cm and an angle of 85º at point E. As vertex A is 6 cm away from vertex E, cut a line segment EA of 6 cm from this ray.



(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.



(3) Join R to H and A.



HEAR is the required quadrilateral.

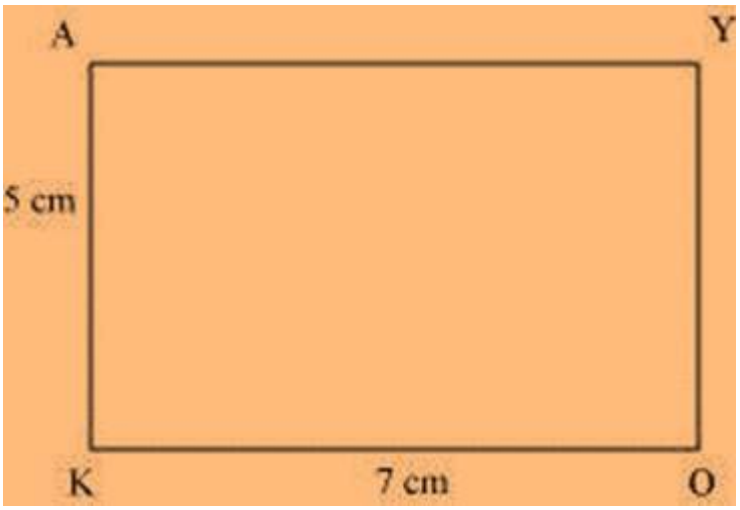
(iv) Rectangle OKAY

OK = 7 cm KA = 5 cm

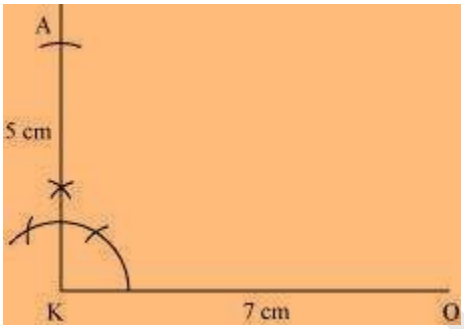
Solution:

Rough Figure:

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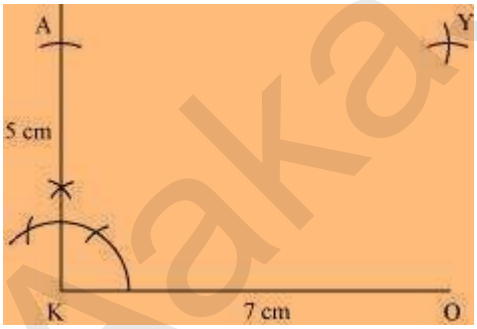


(1) Draw a line segment OK of 7 cm and an angle of 90º at point K. As vertex A is 5 cm away from vertex K, cut a line segment KA of 5 cm from this ray.



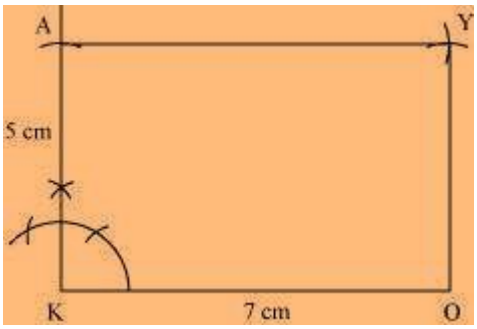
(2) Vertex Y is 5 cm and 7 cm away from vertex O and A respectively. By taking

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.

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OKAY is the required quadrilateral.

Exercise 4.4

1. Construct the following quadrilaterals,

(i) Quadrilateral DEAR DE = 4 cm

EA = 5 cm AR

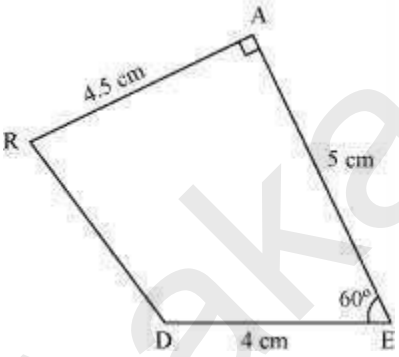
= 4.5 cm

∠E = 60°

∠A = 90°

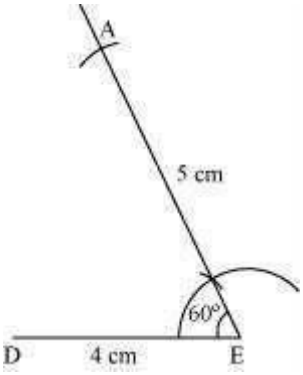
Solution:

Rough Figure:

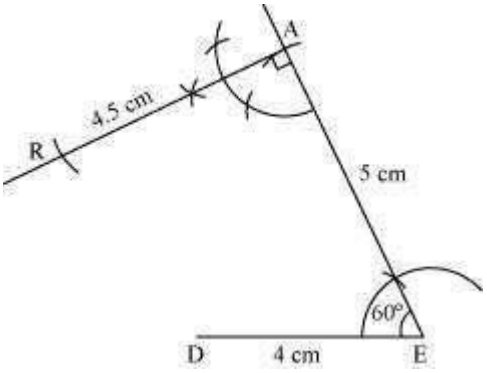


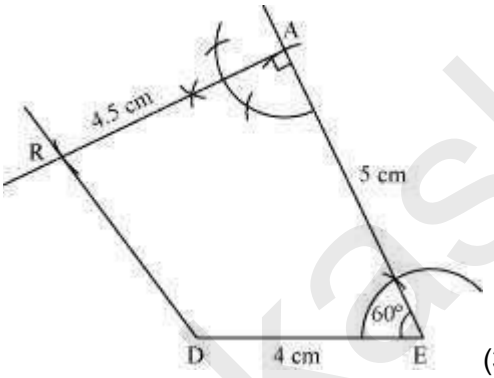
(1) Draw a line segment DE of 4 cm and an angle of 60º at point E. As vertex A is 5 cm away from vertex E, cut a line segment EA of 5 cm from this ray.

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(2) Again draw an angle of 90º 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.





(3) Join D to R.

DEAR is the required quadrilateral.

(ii) Quadrilateral TRUE TR = 3.5 cm

RU = 3 cm UE = 4 cm

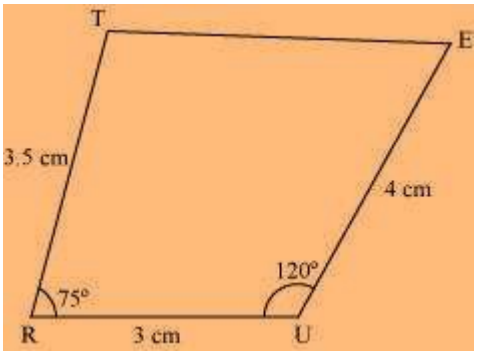
∠R = 75°

∠U = 120°

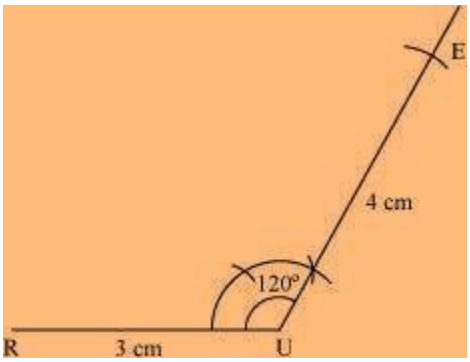
Solution:

Rough Figure:

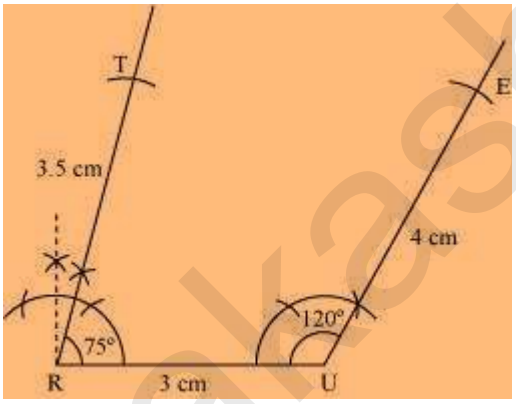
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(1) Draw a line segment RU of 3 cm and an angle of 120º at point U. As vertex E is 4 cm away from vertex U, cut a line segment UE of 4 cm from this ray.

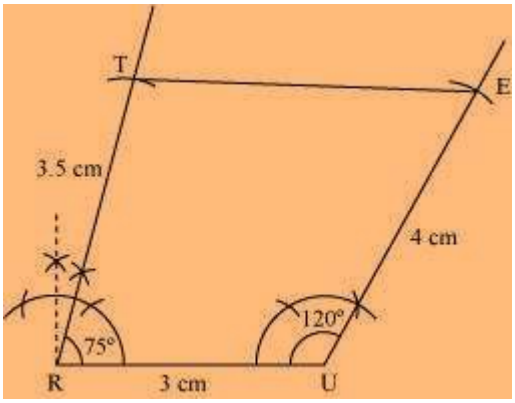


(2) Next, draw an angle of 75º at point R. As vertex T is 3.5 cm away from vertex R, cut a line segment RT of 3.5 cm from this ray.



(3) Join T to E.

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TRUE is the required quadrilateral.

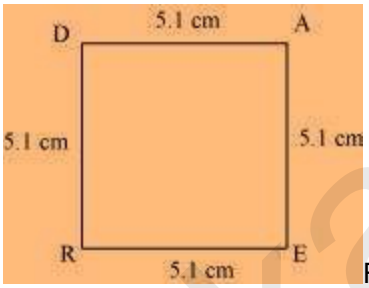
Exercise 4.5

Draw the following:

1. The square READ with RE = 5.1 cm

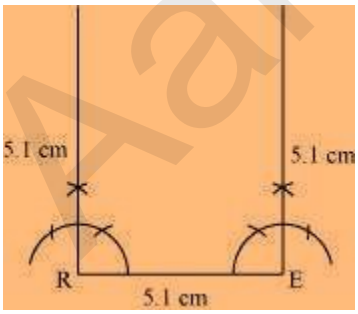
Solution:

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



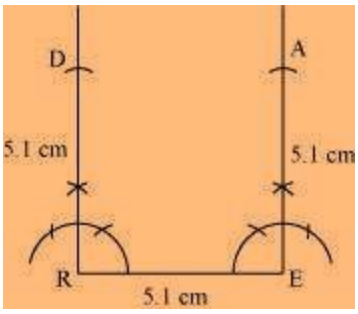
Rough Figure:

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

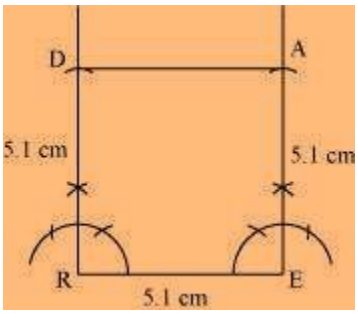


(2) As vertex A and D are 5.1 cm away from vertex E and R respectively, cut line segments EA and RD, each of 5.1 cm from these rays.

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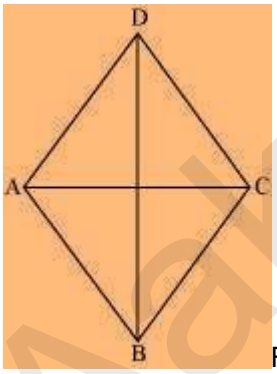
(3) Join D to A.



READ is the required square.

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

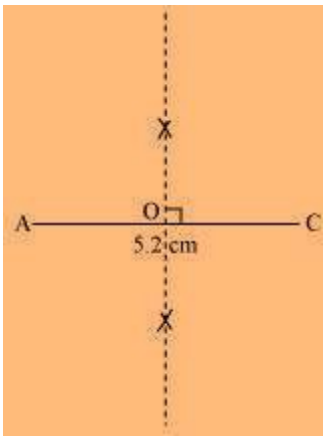
In a rhombus, diagonals bisect each other at 90º. ∴, the given rhombus ABCD can be drawn as follows.



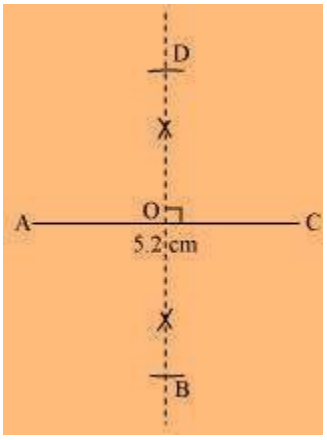
Rough Figure:

(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.

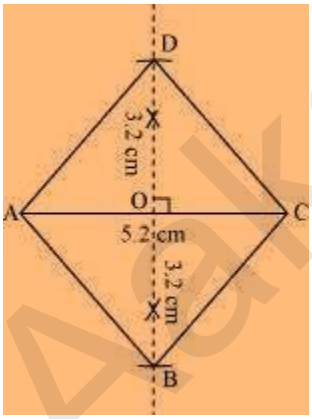
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(2) Draw arcs of 6.4/2 = 3.2 on both sides of this perpendicular bisector. Let the arcs intersect the perpendicular bisector at point B and D.



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



ABCD is the required rhombus.

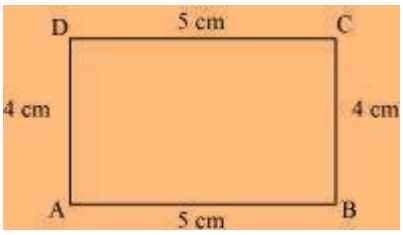
3. A rectangle with adjacent sides of length 5 cm and 4 cm.

Solution:

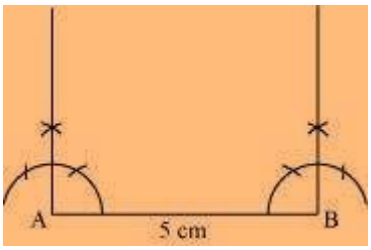
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Opposite sides of a rectangle have their lengths of same measure and also, all the interior angles of a rectangle are of 90º measure. The given rectangle ABCD may be drawn as follows.

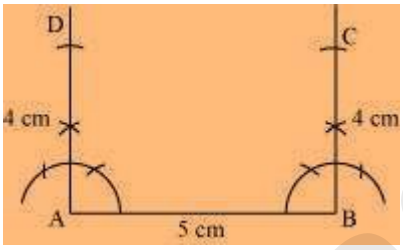
Rough figure:



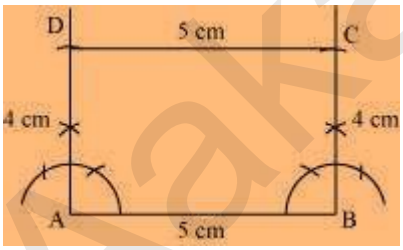
(1) Draw a line segment AB of 5 cm and an angle of 90º at point A and B.



(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.



(3) Join D to C.



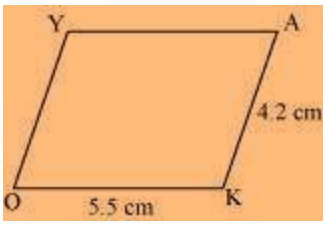
ABCD is the required rectangle.

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

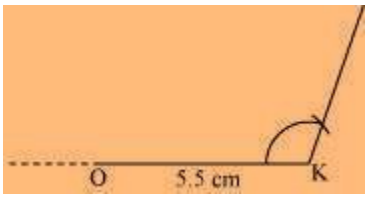
Opposite sides of a parallelogram are equal and parallel to each other. The given parallelogram OKAY can be drawn as follows.

Rough Figure:

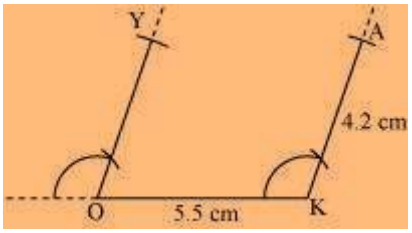
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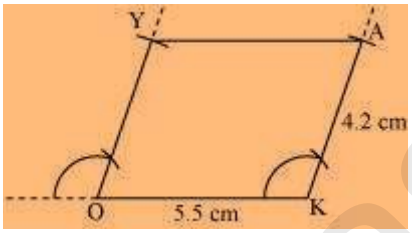
(1) Draw a line segment OK of 5.5 cm and a ray at point K at a convenient angle.



(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.



(3) Join Y to A.



OKAY is the required rectangle.

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