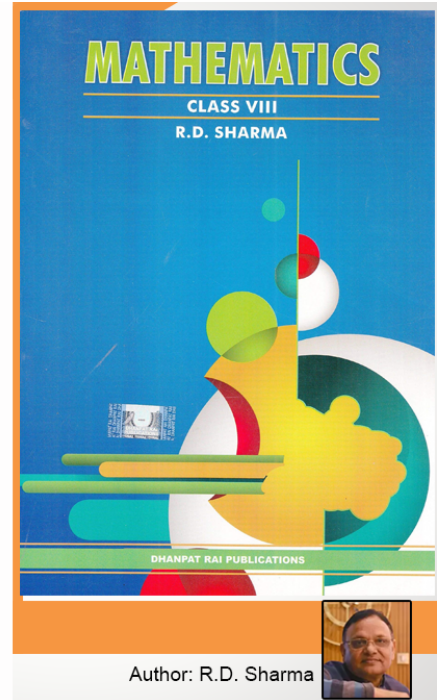


# Class 8 - Chapter 18 Practical Geometry (Constructions)



## RD Sharma Solutions for Class 8 Maths Chapter 18–Practical Geometry (Constructions)

Class 8: Maths Chapter 18 solutions. Complete Class 8 Maths Chapter 18 Notes.

### RD Sharma Solutions for Class 8 Maths Chapter 18–Practical Geometry (Constructions)

RD Sharma 8th Maths Chapter 18, Class 8 Maths Chapter 18 solutions

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EXERCISE 18.1 PAGE NO: 18.4

1. Construct a quadrilateral ABCD in which AB = 4.4 cm, BC = 4 cm, CD = 6.4 cm, DA = 3.8 cm and BD = 6.6 cm.

**Solution:**

The given details are AB = 4.4 cm, BC = 4 cm, CD = 6.4 cm, DA = 3.8 cm and BD = 6.6 cm.

Divide the quadrilateral into two triangles i.e.,  $\triangle ABD$  and  $\triangle BCD$

Steps to construct a quadrilateral:

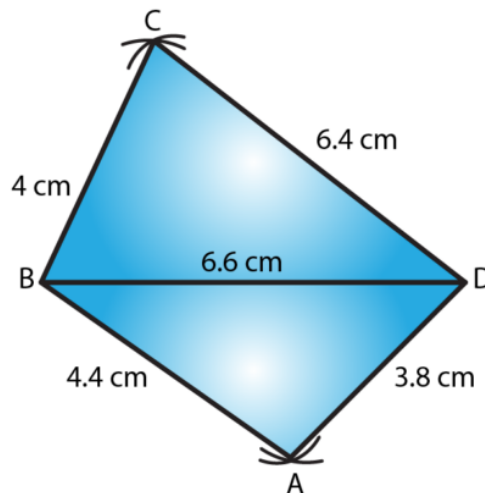
Step 1- By using SSS congruency rule, Draw line BD of length 6.6 cm.

Step 2- Cut an arc with B as the centre and radius BC = 4cm. Do the same by taking D as centre and radius CD = 6.4 cm.

Step 3- Now join the intersection point from B and D and label it as C.

Step 4- Now for vertex A, cut an arc by taking B as the center and radius BA = 4.4cm. Do the same by taking D as center and radius DA = 3.8cm.

Step 5- Join the intersection point from B and D and label it as A.



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**2. Construct a quadrilateral ABCD in which  $AB = BC = 5.5$  cm,  $CD = 4$  cm,  $DA = 6.3$  cm,  $AC = 9.4$  cm Measure BD.**

**Solution:**

The given details are  $AB = BC = 5.5$  cm,  $CD = 4$  cm,  $DA = 6.3$  cm,  $AC = 9.4$  cm Measure BD.

Steps to construct a quadrilateral:

Step 1- Draw a line segment  $AB = 5.5$ cm

Step 2- With B as center and radius  $BC = 5.5$ cm cut an arc. Mark that point as C.

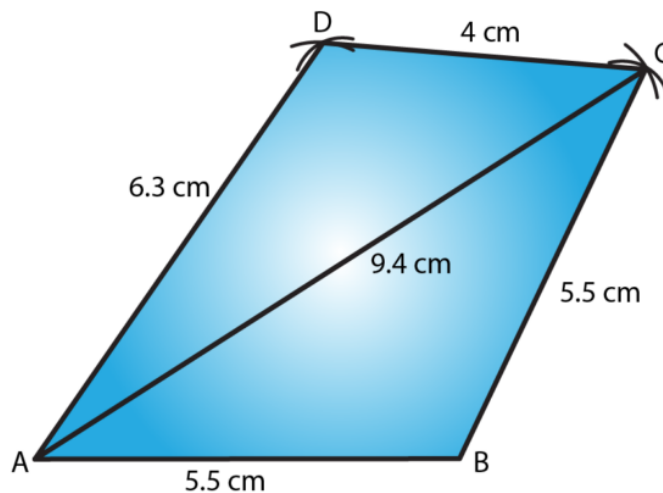
Step 3- With A as center and radius  $AC = 9.4$ cm cut an arc to intersect at point C.

Step 4- With C as center and radius  $CD = 4$ cm cut an arc. Mark that point as D.

Step 5- With A as center and radius  $AD = 6.3$ cm cut an arc to intersect at point D.

Step 6- Now join BC, CD and AD

Measure of BD is 5.1cm.



**3. Construct a quadrilateral XYZW in which  $XY = 5$  cm,  $YZ = 6$  cm,  $ZW = 7$  cm,  $WX = 3$  cm and  $XZ = 9$  cm.**

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**Solution:**

The given details are  $XY = 5\text{cm}$ ,  $YZ = 6\text{cm}$ ,  $ZW = 7\text{cm}$ ,  $WX = 3\text{cm}$  and  $XZ = 9\text{cm}$ .

Steps to construct a quadrilateral:

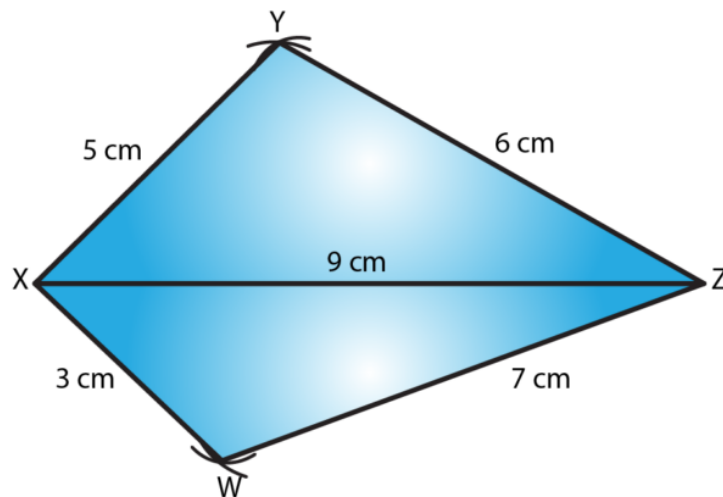
Step 1- Draw line  $XZ$  of length  $9\text{cm}$ .

Step 2- Cut an arc by taking  $X$  as the centre radius  $XY = 5\text{cm}$ . Do the same by taking  $Z$  as centre and radius  $ZY = 6\text{cm}$ .

Step 3- Now join the intersection point from  $X$  and  $Z$  and label it as  $Y$ .

Step 4- For vertex  $W$ , cut an arc by taking  $X$  as the center and radius  $XW = 3\text{cm}$ . Similarly, taking  $Z$  as the center and radius  $ZW = 7\text{cm}$ .

Step 5- Join the intersection point from  $X$  and  $Z$  and label it as  $W$ .



**4. Construct a parallelogram PQRS such that  $PQ = 5.2\text{ cm}$ ,  $PR = 6.8\text{ cm}$ , and  $QS = 8.2\text{ cm}$ .**

**Solution:**

The given details are  $PQ = 5.2\text{ cm}$ ,  $PR = 6.8\text{ cm}$ , and  $QS = 8.2\text{ cm}$ .

Steps to construct a parallelogram:

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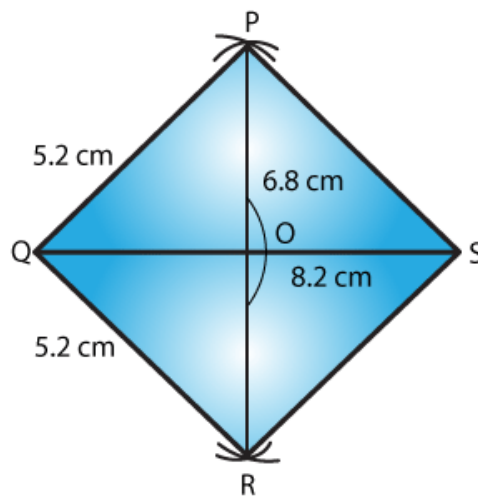
Step 1- Draw line QS of length 8.2 cm.

Step 2- Divide the line segment QS into half i.e 4.1 cm and mark that point as O. Now by taking O as center cut an arc on both the sides of O with a radius of 3.4cm each. And mark that points as P and R.

Step 3- cut an arc by taking Q as a center and radius QR = 5.2cm to intersect with point R.

Step 4- cut an arc by taking Q as a center and radius QP = 5.2cm to intersect with point P.

Step 5- Join sides PQ, PS, QR and RS.



**5. Construct a rhombus with side 6 cm and one diagonal 8 cm. Measure the other diagonal.**

**Solution:**

The given details are side 6 cm and one diagonal 8 cm.

We know all the sides of a rhombus are equal and diagonals bisect each other.

Steps to construct a rhombus:

Step 1- Draw a line XZ of length 8 cm.

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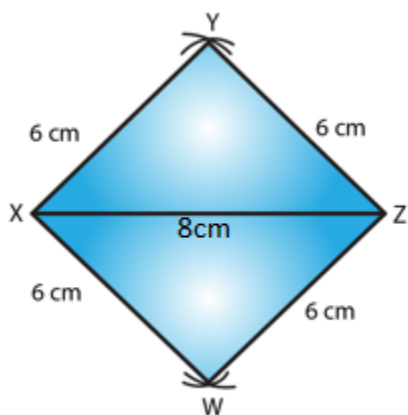
Step 2- By taking a radius of 6 cm, cut an arc by taking X as the center. Do the same by taking Z as centre with radius of 6 cm.

Step 3- Now join the intersection point from X and Z and label it as Y.

Step 4- Now for vertex W, by taking radius of 6 cm and cut an arc by taking X as the center. Do the same by taking Z as center and radius of 6 cm.

Step 5- Join the intersection point from X and Z and label it as W.

Step 6- Now join XY, XW, XZ and ZY



**6. Construct a kite ABCD in which AB = 4 cm, BC = 4.9 cm, AC = 7.2 cm.**

**Solution:**

The given details are AB = 4 cm, BC = 4.9 cm, AC = 7.2 cm.

Steps to construct a kite:

Step 1- Draw line AC of length 7.2 cm.

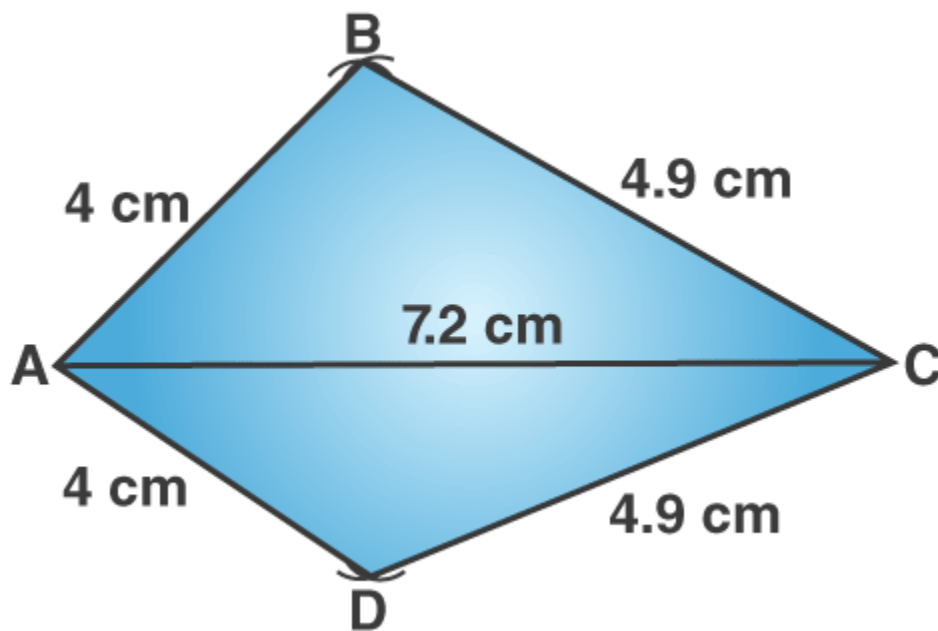
Step 2- By taking a radius of 4 cm and cut an arc by taking A as the center. Do the same by taking C as centre with radius of 4.9 cm.

Step 3- Now join the intersection point from A and C and label it as B.

Step 4- Now for vertex D, cut an arc by taking A as the center. Do the same by taking C as center with radius of 4.9 cm.

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Step 5- Join the intersection point from A and C and label it as D.



7. Construct, if possible, a quadrilateral ABCD given  $AB = 6$  cm,  $BC = 3.7$  cm,  $CD = 5.7$  cm,  $AD = 5.5$  cm and  $BD = 6.1$  cm. Give reasons for not being able to construct it, if you cannot.

**Solution:**

The given details are  $AB = 6$  cm,  $BC = 3.7$  cm,  $CD = 5.7$  cm,  $AD = 5.5$  cm and  $BD = 6.1$  cm.

Steps to construct a quadrilateral:

Step 1- Draw a line AB of length 6cm.

Step 2- With A as a center cut an arc of radius 5.5cm and mark that point as D.

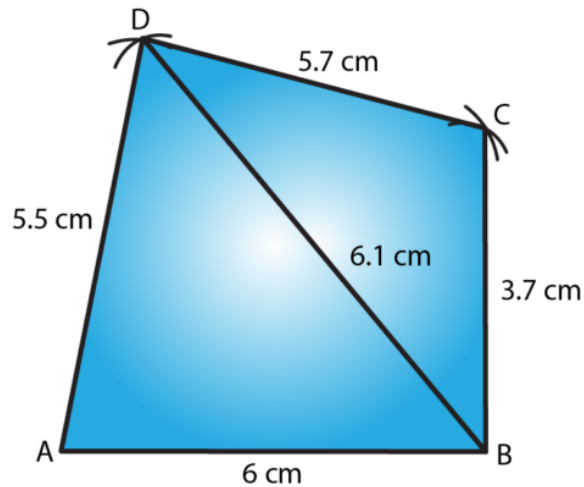
Step 3- With B as a center cut an arc of radius 6.1cm to intersect with point D.

Step 4- With B as a center cut an arc of radius 3.7cm and mark that point as C.

Step 5- With D as a center cut an arc of radius 5.7cm to intersect with point C.

Step 6- Now join AD, BD, BC and DC

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**8. Construct, if possible, a quadrilateral ABCD in which  $AB = 6$  cm,  $BC = 7$  cm,  $CD = 3$  cm,  $AD = 5.5$  cm and  $AC = 11$  cm. Give reasons for not being able to construct, if you cannot. (Not possible, because in triangle ACD,  $AD + CD < AC$ ).**

**Solution:**

The given details are  $AB = 6$  cm,  $BC = 7$  cm,  $CD = 3$  cm,  $AD = 5.5$  cm and  $AC = 11$  cm.

Such a Quadrilateral cannot be constructed because, in a triangle, the sum of the length of its two sides must be greater than that of the third side.

In triangle ACD,

$$AD + CD = 5.5 + 3 = 8.5 \text{ cm}$$

Given,  $AC = 11$  cm

So,  $AD + CD < AC$  which is not possible.

$\therefore$  The construction is not possible

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EXERCISE 18.2 PAGE NO: 18.6

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1. Construct a quadrilateral ABCD in which  $AB = 3.8$  cm,  $BC = 3.0$  cm,  $AD = 2.3$  cm,  $AC = 4.5$  cm and  $BD = 3.8$  cm.

**Solution:**

The given details are  $AB = 3.8$  cm,  $BC = 3.0$  cm,  $AD = 2.3$  cm,  $AC = 4.5$  cm and  $BD = 3.8$  cm.

Steps to construct a quadrilateral:

Step 1- Draw a line  $AC = 6$ cm.

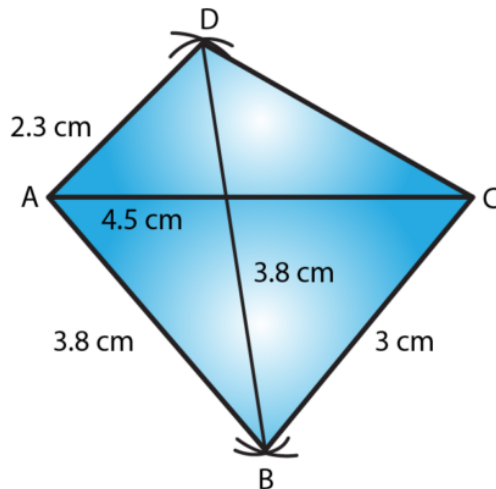
Step 2- Cut an arc of radius 3.8cm with A as the center to mark that point as B.

Step 3- Cut an arc of radius 3cm with C as the center to intersect with point B.

Step 4- Cut an arc of radius 3.8cm with B as the center to mark that point as D.

Step 5- Cut an arc of radius 2.3cm with A as the center to intersect with point D.

Step 6- Now join AB, BD, AD and DC



2. Construct a quadrilateral ABCD in which  $BC = 7.5$  cm,  $AC = AD = 6$  cm,  $CD = 5$  cm and  $BD = 10$  cm.

**Solution:**

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The given details are  $BC = 7.5$  cm,  $AC = AD = 6$  cm,  $CD = 5$  cm and  $BD = 10$  cm.

Steps to construct a quadrilateral:

Step 1- Draw a line  $AC = 6$ cm.

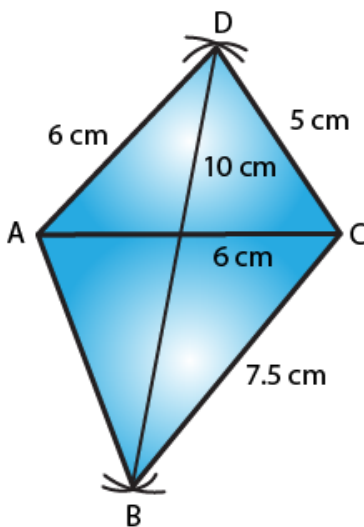
Step 2- Cut an arc of radius 6cm with A as the center to mark that point as D.

Step 3- Cut an arc of radius 5cm with C as the center to intersect at point D.

Step 4- Cut an arc of radius 10cm with D as the center to mark that point as B.

Step 5- Cut an arc of radius 7.5cm with C as the center to intersect at point B.

Step 6- Now join AD, CD, DB and AB



**3. Construct a quadrilateral ABCD when  $AB = 3$  cm,  $CD = 3$  cm,  $DA = 7.5$  cm,  $AC = 8$  cm and  $BD = 4$  cm.**

**Solution:**

The given details are  $AB = 3$  cm,  $CD = 3$  cm,  $DA = 7.5$  cm,  $AC = 8$  cm and  $BD = 4$  cm.

Consider a triangle ABD from the given data,

So,  $AB + BD = 3 + 4 = 7$ cm

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We know that sum of lengths of two sides of a triangle is always greater than the third side.

∴ The construction is not possible.

**4. Construct a quadrilateral ABCD given AD = 3.5 cm, BC = 2.5 cm, CD = 4.1 cm, AC = 7.3 cm and BD = 3.2 cm.**

**Solution:**

The given details are AD = 3.5 cm, BC = 2.5 cm, CD = 4.1 cm, AC = 7.3 cm and BD = 3.2 cm.

Steps to construct a quadrilateral:

Step 1- Draw a line CD = 4.1cm

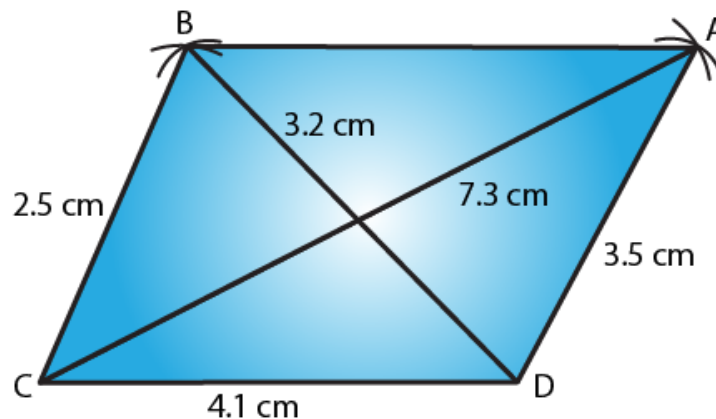
Step 2- Cut an arc of radius 7.3cm with C as the center to mark that point as A.

Step 3- Cut an arc of radius 3.5cm with D as the center to intersect at point A.

Step 4- Cut an arc of radius 3.2cm with D as the center to mark that point as B.

Step 5- Cut an arc of radius 2.5cm with C as the center to intersect at point B.

Step 6- Now join CA, DA, DB, CB and AB



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5. Construct a quadrilateral ABCD given  $AD = 5$  cm,  $AB = 5.5$  cm,  $BC = 2.5$  cm,  $AC = 7.1$  cm and  $BD = 8$  cm.

**Solution:**

The given details are  $AD = 5$  cm,  $AB = 5.5$  cm,  $BC = 2.5$  cm,  $AC = 7.1$  cm and  $BD = 8$  cm.

Steps to construct a quadrilateral:

Step 1- Draw a line  $AB = 5.5$ cm

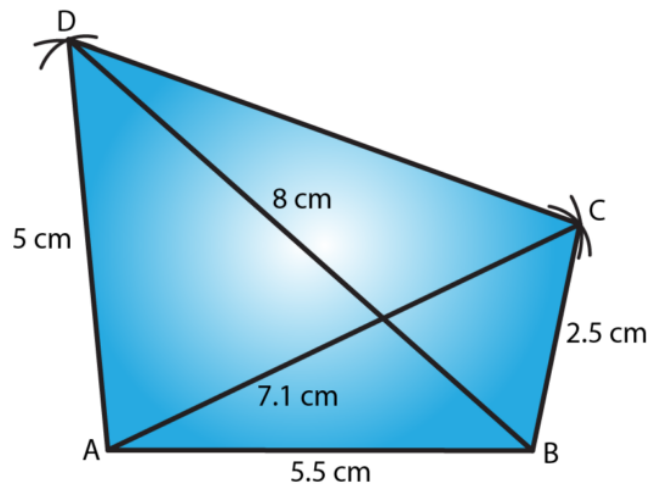
Step 2- Cut an arc of radius 2.5cm with B as the center to mark that point as C.

Step 3- Cut an arc of radius 7.1cm with A as the center to intersect at point C.

Step 4- Cut an arc of radius 8cm with B as the center to mark that point as D.

Step 5- Cut an arc of radius 5cm with A as the center to intersect at point D.

Step 6- Now join BC, AC, BD, AD and CD



6. Construct a quadrilateral ABCD in which  $BC = 4$  cm,  $CA = 5.6$  cm,  $AD = 4.5$  cm,  $CD = 5$  cm and  $BD = 6.5$  cm.

**Solution:**

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The given details are  $BC = 4\text{ cm}$ ,  $CA = 5.6\text{ cm}$ ,  $AD = 4.5\text{ cm}$ ,  $CD = 5\text{ cm}$  and  $BD = 6.5\text{ cm}$ .

Steps to construct a quadrilateral:

Step 1- Draw a line  $BC = 4\text{ cm}$

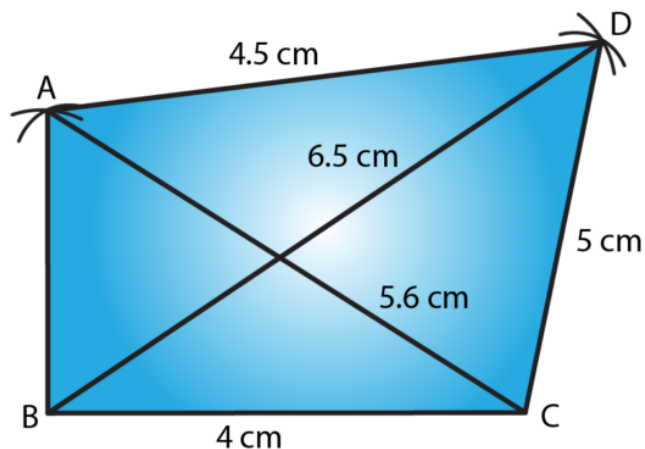
Step 2- Cut an arc of radius  $6.5\text{ cm}$  with  $B$  as the center to mark that point as  $D$ .

Step 3- Cut an arc of radius  $5\text{ cm}$  with  $C$  as the center to intersect at point  $D$ .

Step 4- Cut an arc of radius  $5.6\text{ cm}$  with  $C$  as the center to mark that point as  $A$ .

Step 5- Cut an arc of radius  $4.5\text{ cm}$  with  $D$  as the center to intersect at point  $A$ .

Step 6- Now join  $BD$ ,  $CD$ ,  $CA$ ,  $DA$  and  $AB$



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EXERCISE 18.3 PAGE NO: 18.8

**1. Construct a quadrilateral ABCD in which  $AB = 3.8\text{ cm}$ ,  $BC = 3.4\text{ cm}$ ,  $CD = 4.5\text{ cm}$ ,  $AD = 5\text{ cm}$  and  $\angle B = 80^\circ$ .**

**Solution:**

The given details are  $AB = 3.8\text{ cm}$ ,  $BC = 3.4\text{ cm}$ ,  $CD = 4.5\text{ cm}$ ,  $AD = 5\text{ cm}$  and  $\angle B = 80^\circ$ .

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Steps to construct a quadrilateral:

Step 1- Draw a line  $AB = 3.8\text{cm}$

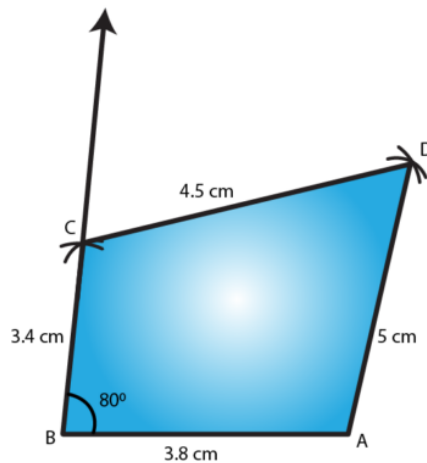
Step 2- Construct an angle of  $80^\circ$  at B.

Step 3- Cut an arc of radius  $3.4\text{cm}$  with B as the center to mark that point as C.

Step 4- Cut an arc of radius  $5\text{cm}$  with A as the center to mark that point as D.

Step 5- Cut an arc of radius  $4.5\text{cm}$  with C as the center to intersect at point D.

Step 6- Now join BC, AD and CD



**2. Construct a quadrilateral ABCD given that  $AB = 8\text{ cm}$ ,  $BC = 8\text{ cm}$ ,  $CD = 10\text{ cm}$ ,  $AD = 10\text{ cm}$  and  $\angle A = 45^\circ$ .**

**Solution:**

The given details are  $AB = 8\text{ cm}$ ,  $BC = 8\text{ cm}$ ,  $CD = 10\text{ cm}$ ,  $AD = 10\text{ cm}$  and  $\angle A = 45^\circ$ .

Steps to construct a quadrilateral:

Step 1- Draw a line  $AB = 8\text{cm}$

Step 2- Construct an angle of  $45^\circ$  at A.

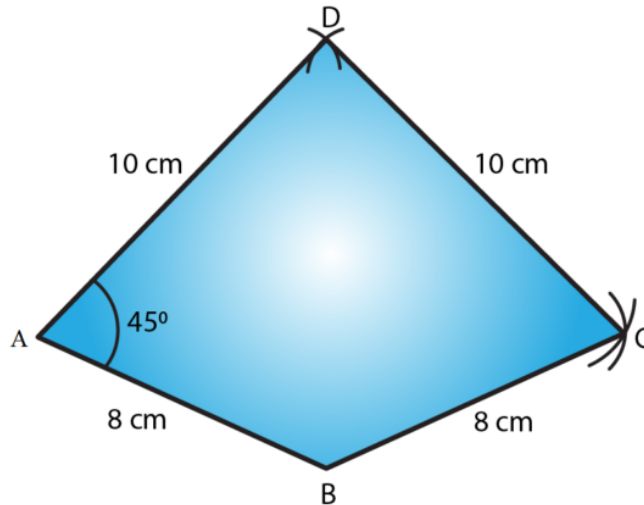
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Step 3- Cut an arc of radius 10cm with A as the center to mark that point as D.

Step 4- Cut an arc of radius 10cm with D as the center to mark that point as C.

Step 5- Cut an arc of radius 8cm with B as the center to intersect at point C.

Step 6- Now join AD, DC and BC



**3. Construct a quadrilateral ABCD in which AB = 7.7 cm, BC = 6.8 cm, CD = 5.1 cm, AS = 3.6 cm and  $\angle C = 120^\circ$ .**

**Solution:**

The given details are AB = 7.7 cm, BC = 6.8 cm, CD = 5.1 cm, AS = 3.6 cm and  $\angle C = 120^\circ$ .

Steps to construct a quadrilateral:

Step 1- Draw a line DC = 5.1cm

Step 2- Construct and angle of  $120^\circ$  at C.

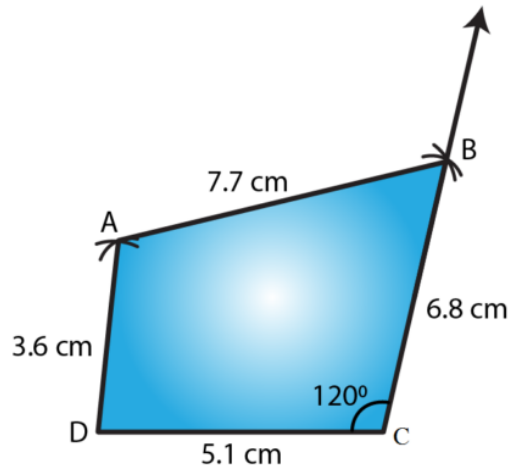
Step 3- Cut an arc of radius 6.8cm with C as the center to mark that point as B.

Step 4- Cut an arc of radius 7.7cm with B as the center to mark that point as A.

Step 5- Cut an arc of radius 3.6cm with D as the center to intersect at point A.

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Step 6- Now join CB, BA and DA



**4. Construct a quadrilateral ABCD in which  $AB = BC = 3$  cm,  $AD = CD = 5$  cm and  $\angle B = 120^\circ$ .**

**Solution:**

The given details are  $AB = BC = 3$  cm,  $AD = CD = 5$  cm and  $\angle B = 120^\circ$ .

Steps to construct a quadrilateral:

Step 1- Draw a line  $AB = 3$ cm

Step 2- Construct an angle of  $120^\circ$  at B.

Step 3- Cut an arc of radius 3cm with B as the center to mark that point as C.

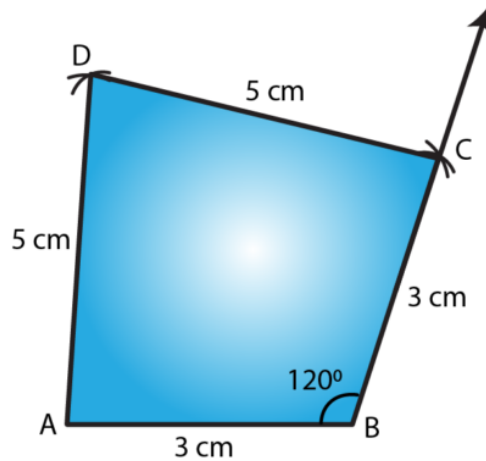
Step 4- Cut an arc of radius 5cm with C as the center to mark that point as D.

Step 5- Cut an arc of radius 5cm with A as the center to intersect at point D.

Step 6- Now join BC, CD and DA

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**5. Construct a quadrilateral ABCD in which AB = 2.8 cm, BC = 3.1 cm, CD = 2.6 cm and DA = 3.3 cm and  $\angle A = 60^\circ$ .**

**Solution:**

The given details are AB = 2.8 cm, BC = 3.1 cm, CD = 2.6 cm and DA = 3.3 cm and  $\angle A = 60^\circ$ .

Steps to construct a quadrilateral:

Step 1- Draw a line AB = 2.8cm

Step 2- Construct an angle of  $60^\circ$  at A.

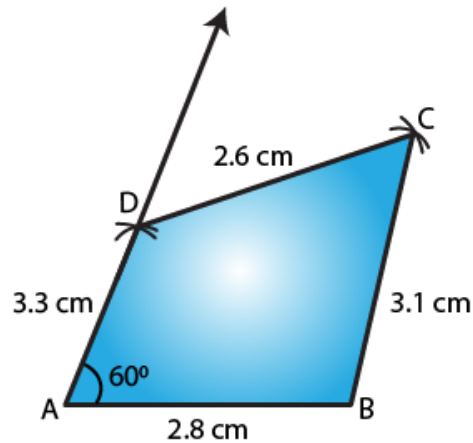
Step 3- Cut an arc of radius 3.3cm with A as the center to mark that point as D.

Step 4- Cut an arc of radius 2.6cm with D as the center to mark that point as C.

Step 5- Cut an arc of radius 3.1cm with B as the center to intersect at point C.

Step 6- Now join AD, DC and CB

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6. Construct a quadrilateral ABCD in which  $AB = BC = 6$  cm,  $AD = DC = 4.5$  cm and  $\angle B = 120^\circ$ .

**Solution:**

The given details are  $AB = BC = 6$  cm,  $AD = DC = 4.5$  cm and  $\angle B = 120^\circ$ .

Steps to construct a quadrilateral:

Step 1- Draw a line  $AB = 6$ cm

Step 2- Construct an angle of  $120^\circ$  at B.

Step 3- Cut an arc of radius 6cm with B as the center to mark that point as C.

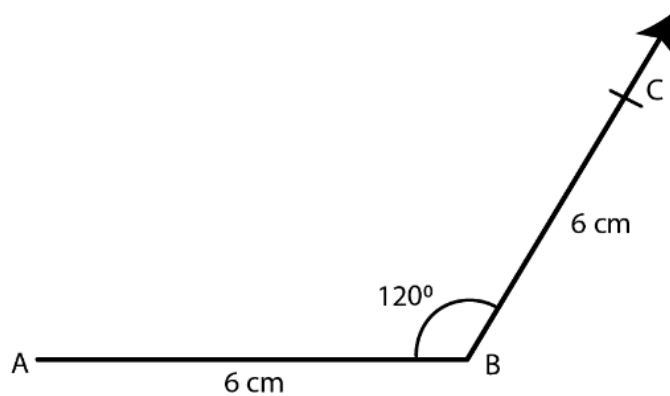
Here, AC is about 10.3cm in length which is greater than  $AD + CD = 4.5 + 4.5 = 9$ cm

We know that sum of the two sides of a triangle is always greater than the third side.

$$AD + CD < AC$$

$\therefore$  Construction is not possible.

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EXERCISE 18.4 PAGE NO: 18.10

**1. Construct a quadrilateral ABCD in which  $AB = 6\text{ cm}$ ,  $BC = 4\text{ cm}$ ,  $CD = 4\text{ cm}$ ,  $\angle B = 95^\circ$  and  $\angle C = 90^\circ$ .**

**Solution:**

The given details are  $AB = 6\text{ cm}$ ,  $BC = 4\text{ cm}$ ,  $CD = 4\text{ cm}$ ,  $\angle B = 95^\circ$  and  $\angle C = 90^\circ$ .

Steps to construct a quadrilateral:

Step 1- Draw a line  $BC = 4\text{ cm}$

Step 2- Construct an angle of  $95^\circ$  at B.

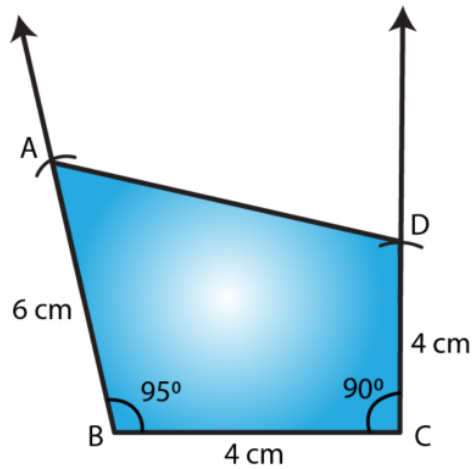
Step 3- Cut an arc of radius  $6\text{ cm}$  with B as the center to mark that point as A.

Step 4- Construct an angle of  $90^\circ$  at C.

Step 5- Cut an arc of radius  $4\text{ cm}$  with C as the center to mark that point as D.

Step 6- Now join BA, CD and AD

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**2. Construct a quadrilateral ABCD where  $AB = 4.2\text{cm}$ ,  $BC = 3.6\text{ cm}$ ,  $CD = 4.8\text{ cm}$ ,  $\angle B = 30^\circ$  and  $\angle C = 150^\circ$ .**

**Solution:**

The given details are  $AB = 4.2\text{cm}$ ,  $BC = 3.6\text{ cm}$ ,  $CD = 4.8\text{ cm}$ ,  $\angle B = 30^\circ$  and  $\angle C = 150^\circ$ .

Steps to construct a quadrilateral:

Step 1- Draw a line  $BC = 3.6\text{cm}$

Step 2- Construct an angle of  $30^\circ$  at B.

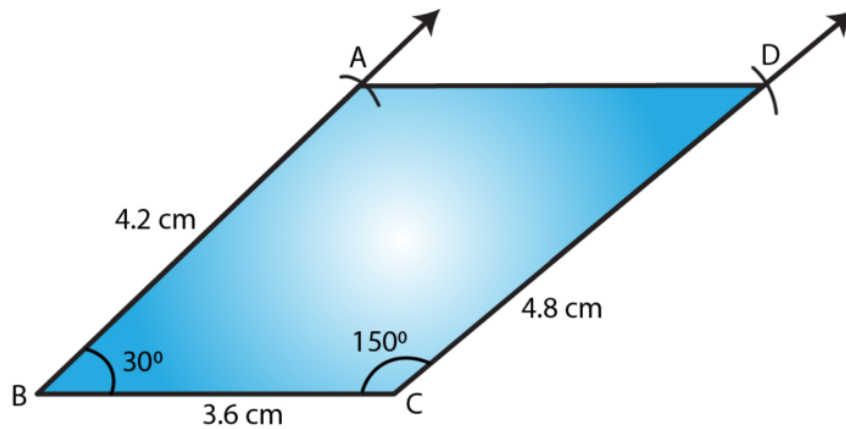
Step 3- Cut an arc of radius  $4.2\text{cm}$  with B as the center to mark that point as A.

Step 4- Construct an angle of  $150^\circ$  at C.

Step 5- Cut an arc of radius  $4.8\text{cm}$  with C as the center to mark that point as D.

Step 6- Now join BA, CD and AD

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**3. Construct a quadrilateral PQRS in which PQ = 3.5 cm, QR = 2.5 cm, RS = 4.1 cm,  $\angle Q = 75^\circ$  and  $\angle R = 120^\circ$ .**

**Solution:**

The given details are PQ = 3.5 cm, QR = 2.5 cm, RS = 4.1 cm,  $\angle Q = 75^\circ$  and  $\angle R = 120^\circ$ .

Steps to construct a quadrilateral:

Step 1- Draw a line QR = 2.5cm

Step 2- Construct an angle of  $75^\circ$  at Q.

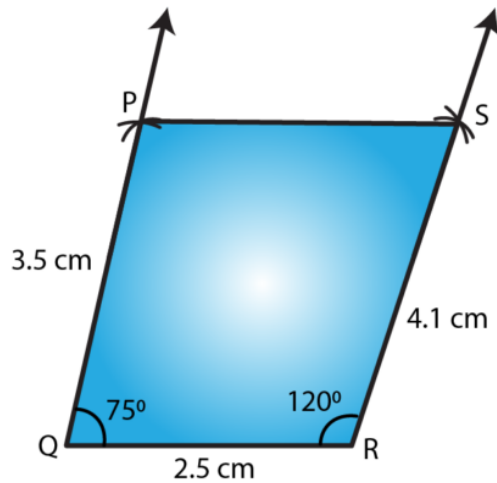
Step 3- Cut an arc of radius 3.5cm with Q as the center to mark that point as P.

Step 4- Construct an angle of  $120^\circ$  at R.

Step 5- Cut an arc of radius 4.1cm with R as the center to mark that point as S.

Step 6- Now join QP, RS and PS

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**4. Construct a quadrilateral ABCD given  $BC = 6.6$  cm,  $CD = 4.4$  cm,  $AD = 5.6$  cm  $\angle D = 100^\circ$  and  $\angle C = 95^\circ$**

**Solution:**

The given details are  $BC = 6.6$  cm,  $CD = 4.4$  cm,  $AD = 5.6$  cm  $\angle D = 100^\circ$  and  $\angle C = 95^\circ$

Steps to construct a quadrilateral:

Step 1- Draw a line  $DC = 4.4$ cm

Step 2- Construct an angle of  $100^\circ$  at D.

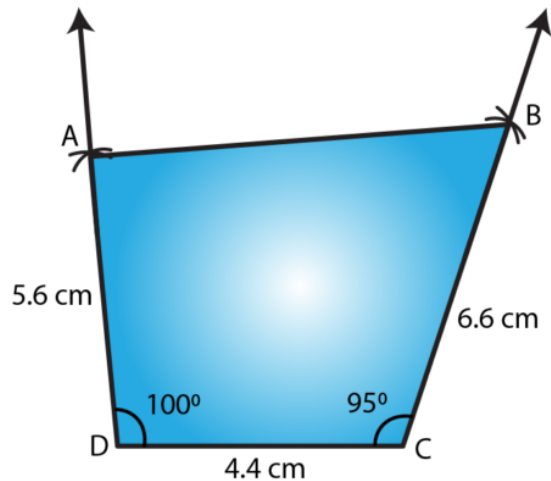
Step 3- Cut an arc of radius 5.6cm with D as the center to mark that point as A.

Step 4- Construct an angle of  $95^\circ$  at C.

Step 5- Cut an arc of radius 6.6cm with C as the center to mark that point as B.

Step 6- Now join DA, CB and AB

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**5. Construct a quadrilateral ABCD in which AD = 3.5 cm, AB = 4.4 cm, BC = 4.7 cm,  $\angle A = 125^\circ$  and  $\angle B = 120^\circ$ .**

**Solution:**

The given details are AD = 3.5 cm, AB = 4.4 cm, BC = 4.7 cm,  $\angle A = 125^\circ$  and  $\angle B = 120^\circ$ .

Steps to construct a quadrilateral:

Step 1- Draw a line AB = 4.4cm

Step 2- Construct an angle of  $125^\circ$  at A.

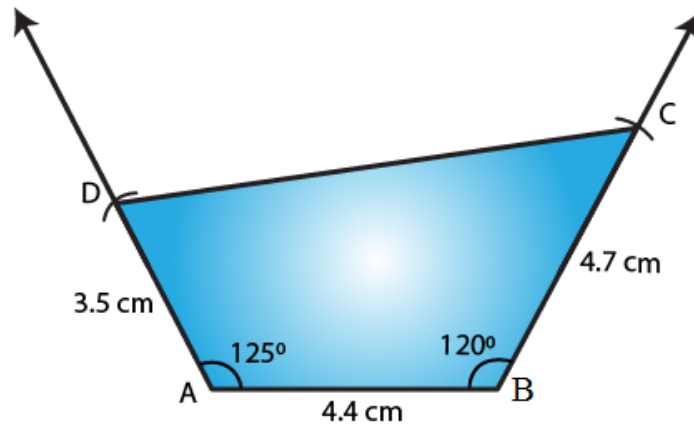
Step 3- Cut an arc of radius 3.5cm with A as the center to mark that point as D.

Step 4- Construct an angle of  $120^\circ$  at B.

Step 5- Cut an arc of radius 4.7cm with B as the center to mark that point as C.

Step 6- Now join AD, BC and CD

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**6. Construct a quadrilateral PQRS in which  $\angle Q = 45^\circ$  and  $\angle R = 90^\circ$ ,  $QR = 5$  cm,  $PQ = 9$  cm and  $RS = 7$  cm.**

**Solution:**

The given details are  $\angle Q = 45^\circ$  and  $\angle R = 90^\circ$ ,  $QR = 5$  cm,  $PQ = 9$  cm and  $RS = 7$  cm.

Steps to construct a quadrilateral:

Step 1- Draw a line  $QR = 5$  cm

Step 2- Construct an angle of  $45^\circ$  at Q.

Step 3- Cut an arc of radius 9 cm with Q as the center to mark that point as P.

Step 4- Construct an angle of  $90^\circ$  at R.

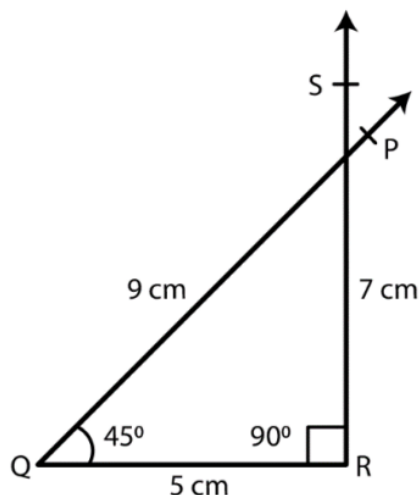
Step 5- Cut an arc of radius 7 cm with R as the center to mark that point as S.

Step 6- Now join QP, RS

Since the line segment QP and RS are not intersecting at each other, quadrilateral cannot be formed.

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**7. Construct a quadrilateral ABCD in which  $AB = BC = 3$  cm,  $AD = 5$  cm,  $\angle A = 90^\circ$  and  $\angle B = 105^\circ$ .**

**Solution:**

The given details are  $AB = BC = 3$  cm,  $AD = 5$  cm,  $\angle A = 90^\circ$  and  $\angle B = 105^\circ$ .

Steps to construct a quadrilateral:

Step 1- Draw a line  $AB = 3$ cm

Step 2- Construct an angle of  $90^\circ$  at A.

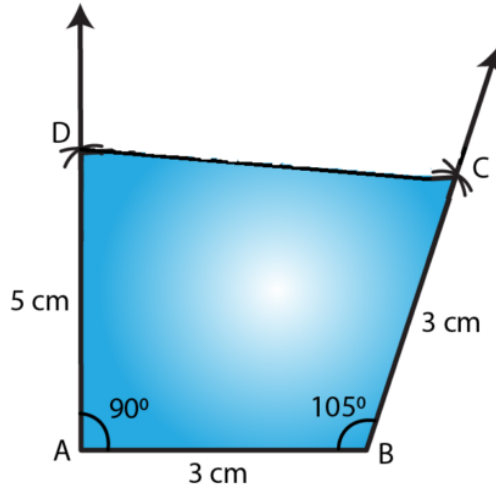
Step 3- Cut an arc of radius 5cm with A as the center to mark that point as D.

Step 4- Construct an angle of  $105^\circ$  at B.

Step 5- Cut an arc of radius 3cm with B as the center to mark that point as C.

Step 6- Now join AD, BC and CD

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8. Construct a quadrilateral BDEF, where  $DE = 4.5$  cm,  $EF = 3.5$  cm,  $FB = 6.5$  cm,  $\angle F = 50^\circ$  and  $\angle E = 100^\circ$ .

**Solution:**

The given details are  $DE = 4.5$  cm,  $EF = 3.5$  cm,  $FB = 6.5$  cm,  $\angle F = 50^\circ$  and  $\angle E = 100^\circ$ .

Steps to construct a quadrilateral:

Step 1- Draw a line  $EF = 3.5$ cm

Step 2- Construct an angle of  $100^\circ$  at E.

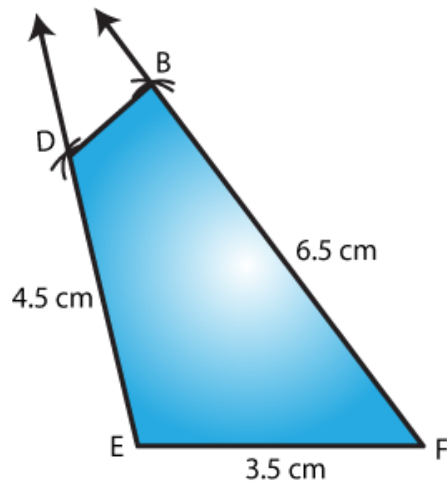
Step 3- Cut an arc of radius 4.5cm with E as the center to mark that point as D.

Step 4- Construct an angle of  $50^\circ$  at F.

Step 5- Cut an arc of radius 6.5cm with F as the center to mark that point as B.

Step 6- Now join DE, FB and DB

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EXERCISE 18.5 PAGE NO: 18.13

**1. Construct a quadrilateral ABCD given that  $AB = 4$  cm,  $BC = 3$  cm,  $\angle A = 75^\circ$ ,  $\angle B = 80^\circ$  and  $\angle C = 120^\circ$ .**

**Solution:**

The given details are  $AB = 4$  cm,  $BC = 3$  cm,  $\angle A = 75^\circ$ ,  $\angle B = 80^\circ$  and  $\angle C = 120^\circ$ .

Steps to construct a quadrilateral:

Step 1- Draw a line  $AB = 4$ cm

Step 2- Construct an angle of  $75^\circ$  at A.

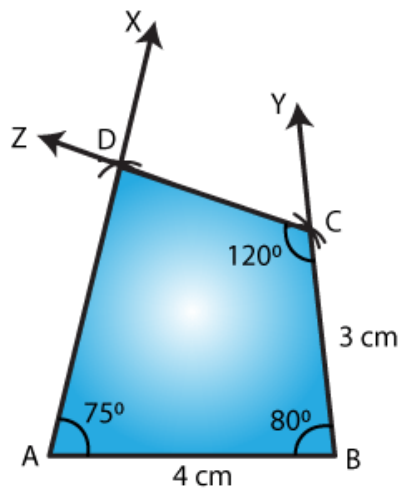
Step 3- Construct an angle of  $80^\circ$  at B.

Step 4- Cut an arc of radius 3cm with B as the center to mark that point as C.

Step 5- Construct an angle of  $120^\circ$  at C such that it meets the line segment AX, mark that point as D.

Step 6- Now join BC, CD and DA

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**2. Construct a quadrilateral ABCD where  $AB = 5.5$  cm,  $BC = 3.7$  cm,  $\angle A = 60^\circ$ ,  $\angle B = 105^\circ$  and  $\angle D = 90^\circ$ .**

**Solution:**

The given details are  $AB = 5.5$  cm,  $BC = 3.7$  cm,  $\angle A = 60^\circ$ ,  $\angle B = 105^\circ$  and  $\angle D = 90^\circ$ .

We know that  $\angle A + \angle B + \angle C + \angle D = 360^\circ$

$$\therefore \angle C = 105^\circ$$

Steps to construct a quadrilateral:

Step 1- Draw a line  $AB = 5.5$ cm

Step 2- Construct an angle of  $60^\circ$  at A.

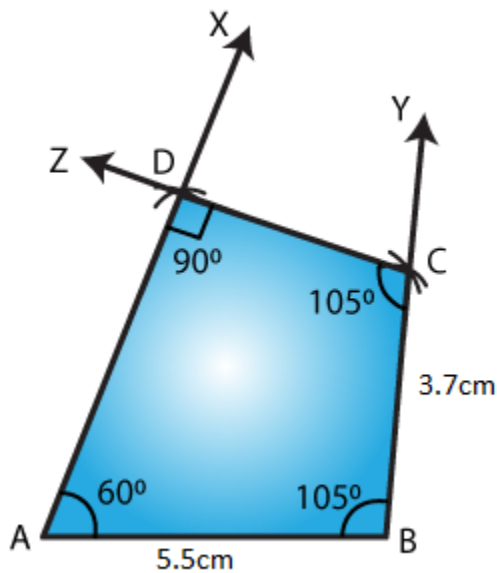
Step 3- Construct an angle of  $105^\circ$  at B.

Step 4- Cut an arc of radius 3.7cm with B as the center to mark that point as C.

Step 5- Construct an angle of  $105^\circ$  at C such that it meets the line segment AX, mark that point as D.

Step 6- Now join BC, CD and DA

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**3. Construct a quadrilateral PQRS where  $PQ = 3.5$  cm,  $QR = 6.5$  cm,  $\angle P = \angle R = 105^\circ$  and  $\angle S = 75^\circ$ .**

**Solution:**

The given details are  $PQ = 3.5$  cm,  $QR = 6.5$  cm,  $\angle P = \angle R = 105^\circ$  and  $\angle S = 75^\circ$ .

We know that  $\angle P + \angle Q + \angle R + \angle S = 360^\circ$

$$\therefore \angle Q = 75^\circ$$

Steps to construct a quadrilateral:

Step 1- Draw a line  $PQ = 3.5$ cm

Step 2- Construct an angle of  $105^\circ$  at P.

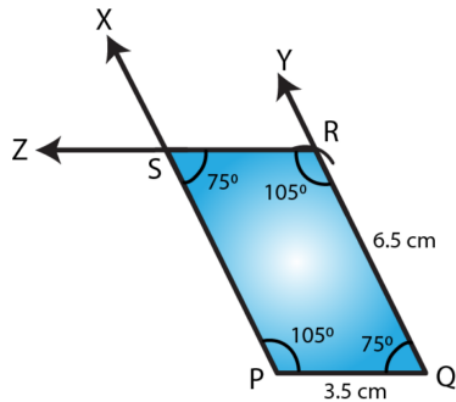
Step 3- Construct an angle of  $75^\circ$  at Q.

Step 4- Cut an arc of radius 6.5cm with Q as the center to mark that point as R.

Step 5- Construct an angle of  $105^\circ$  at R such that it meets the line segment PX, mark that point as S.

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Step 6- Now join QR, RS and PS



**4. Construct a quadrilateral ABCD when BC = 5.5 cm, CD = 4.1 cm,  $\angle A = 70^\circ$ ,  $\angle B = 110^\circ$  and  $\angle D = 85^\circ$ .**

**Solution:**

The given details are BC = 5.5 cm, CD = 4.1 cm,  $\angle A = 70^\circ$ ,  $\angle B = 110^\circ$  and  $\angle D = 85^\circ$ .

We know that  $\angle A + \angle B + \angle C + \angle D = 360^\circ$

$$\therefore \angle C = 95^\circ$$

Steps to construct a quadrilateral:

Step 1- Draw a line BC = 5.5cm

Step 2- Construct an angle of  $110^\circ$  at B.

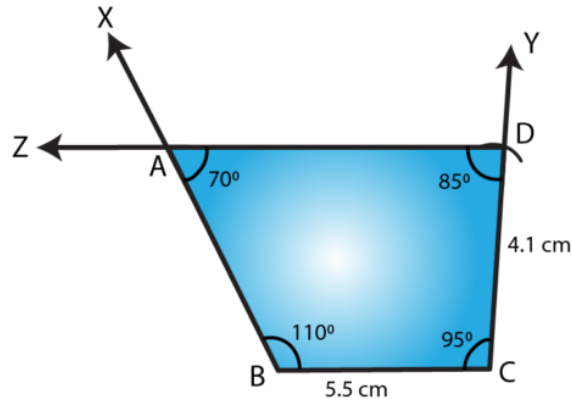
Step 3- Construct an angle of  $95^\circ$  at C.

Step 4- Cut an arc of radius 4.1cm with C as the center to mark that point as D.

Step 5- Construct an angle of  $85^\circ$  at D such that it meets the line segment BX, mark that point as A.

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Step 6- Now join CD, DA and BA



**5. Construct a quadrilateral ABCD  $\angle A = 65^\circ$ ,  $\angle B = 105^\circ$ ,  $\angle C = 75^\circ$ ,  $BC = 5.7$  cm and  $CD = 6.8$  cm.**

**Solution:**

The given details are  $\angle A = 65^\circ$ ,  $\angle B = 105^\circ$ ,  $\angle C = 75^\circ$ ,  $BC = 5.7$  cm and  $CD = 6.8$  cm.

We know that  $\angle A + \angle B + \angle C + \angle D = 360^\circ$

$$\therefore \angle D = 115^\circ$$

Steps to construct a quadrilateral:

Step 1- Draw a line  $BC = 5.7$ cm

Step 2- Construct an angle of  $105^\circ$  at B.

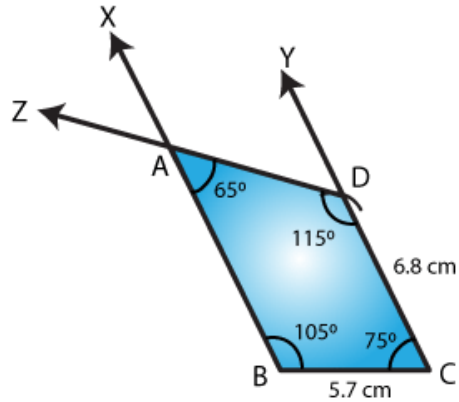
Step 3- Construct an angle of  $75^\circ$  at C.

Step 4- Cut an arc of radius 6.8cm with C as the center to mark that point as D.

Step 5- Construct an angle of  $115^\circ$  at D such that it meets the line segment BX, mark that point as A.

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Step 6- Now join CD, DA and BA



**6. Construct a quadrilateral PQRS in which  $PQ = 4$  cm,  $QR = 5$  cm  $\angle P = 50^\circ$ ,  $\angle Q = 110^\circ$  and  $\angle R = 70^\circ$ .**

**Solution:**

The given details are  $PQ = 4$  cm,  $QR = 5$  cm  $\angle P = 50^\circ$ ,  $\angle Q = 110^\circ$  and  $\angle R = 70^\circ$ .

Steps to construct a quadrilateral:

Step 1- Draw a line  $PQ = 4$ cm

Step 2- Construct an angle of  $50^\circ$  at P.

Step 3- Construct an angle of  $110^\circ$  at Q.

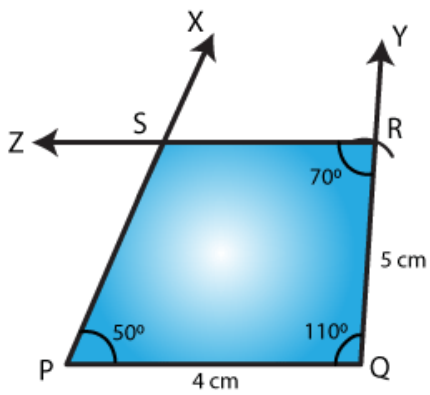
Step 4- Cut an arc of radius 5cm with Q as the center to mark that point as R.

Step 5- Construct an angle of  $70^\circ$  at R such that it meets the line segment PX, mark that point as S.

Step 6- Now join QR, RS and PS

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- Chapter 2–Powers
- Chapter 3–Squares and Square Roots
- Chapter 4–Cubes and Cube Roots
- Chapter 5–Playing with Numbers
- Chapter 6–Algebraic Expressions and Identities
- Chapter 7–Factorization
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- Chapter 9–Linear Equation in One Variable
- Chapter 10–Direct and Inverse Variations
- Chapter 11–Time and Work
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- Chapter 14–Compound Interest
- Chapter 15–Understanding Shapes- I (Polygons)

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- Chapter 16–Understanding Shapes- II (Quadrilaterals)
- Chapter 17–Understanding Shapes- III (Special Types of Quadrilaterals)
- Chapter 18–Practical Geometry (Constructions)
- Chapter 19–Visualising Shapes
- Chapter 20–Mensuration - I (Area of a Trapezium and a Polygon)
- Chapter 21–Mensuration - II (Volumes and Surface Areas of a Cuboid and a cube)
- Chapter 22–Mensuration - III (Surface Area and Volume of a Right Circular Cylinder)
- Chapter 23–Data Handling - I (Classification and Tabulation of Data)
- Chapter 24–Data Handling - II (Graphical Representation of Data as Histogram)
- Chapter 25–Data Handling - III (Pictorial Representation of Data as Pie Charts or Circle Graphs)
- Chapter 26–Data Handling - IV (Probability)
- Chapter 27–Introduction to Graphs

# About RD Sharma

*RD Sharma isn't the kind of author you'd bump into at lit fests. But his bestselling books have helped many CBSE students lose their dread of maths. Sunday Times profiles the tutor turned internet star*

He dreams of algorithms that would give most people nightmares. And, spends every waking hour thinking of ways to explain concepts like 'series solution of linear differential equations'. Meet Dr Ravi Dutt Sharma — mathematics teacher and author of 25 reference books — whose name evokes as much awe as the subject he teaches. And though students have used his thick tomes for the last 31 years to ace the dreaded maths exam, it's only recently that a spoof video turned the tutor into a YouTube star.

R D Sharma had a good laugh but said he shared little with his on-screen persona except for the love for maths. "I like to spend all my time thinking and writing about maths problems. I find it relaxing," he says. When he is not writing books explaining mathematical concepts for classes 6 to 12 and engineering students, Sharma is busy dispensing his duty as vice-principal and head of department of science and humanities at Delhi government's Guru Nanak Dev Institute of Technology.

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