

**EXERCISE 18.3**

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

**Solution:**

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

Steps to construct a quadrilateral:

Step 1- Draw a line AB = 3.8cm

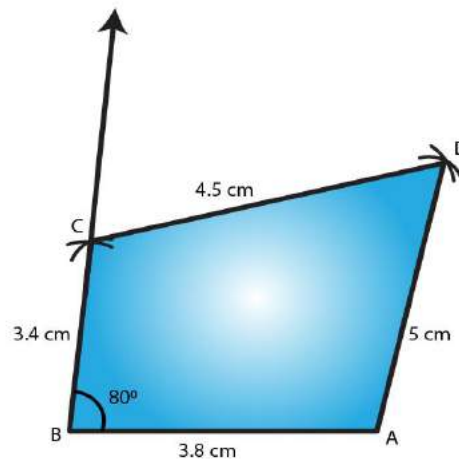
Step 2- Construct an angle of  $80^\circ$  at B.

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

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

Step 5- Cut an arc of radius 4.5cm 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 cm, BC = 8 cm, CD = 10 cm, AD = 10 cm and  $\angle A = 45^\circ$ .**

**Solution:**

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

Steps to construct a quadrilateral:

Step 1- Draw a line AB = 8cm

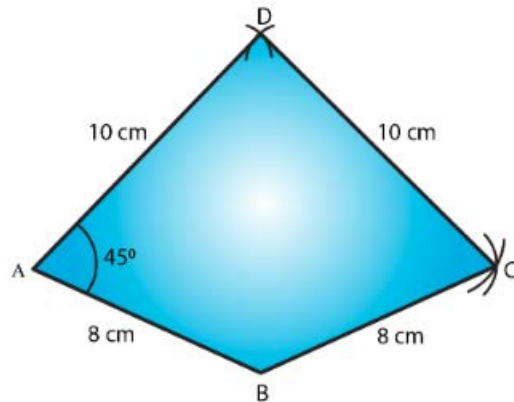
Step 2- Construct an angle of  $45^\circ$  at A.

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,  $AD = 3.6$  cm and  $\angle C = 120^\circ$ .**

**Solution:**

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

Steps to construct a quadrilateral:

Step 1- Draw a line  $DC = 5.1$  cm

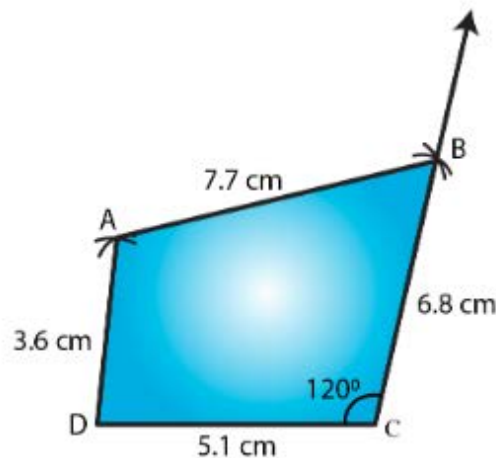
Step 2- Construct an angle of  $120^\circ$  at C.

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

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

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

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

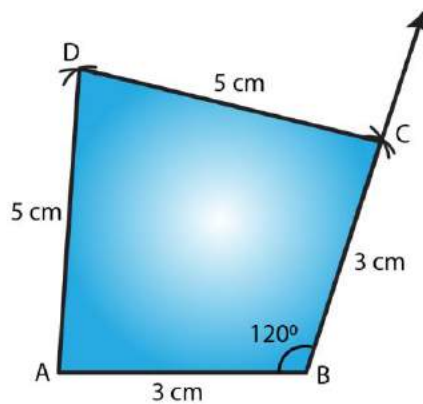
Step 2- Construct an angle of  $120^\circ$  at B.

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



**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  $AB = 2.8$ cm

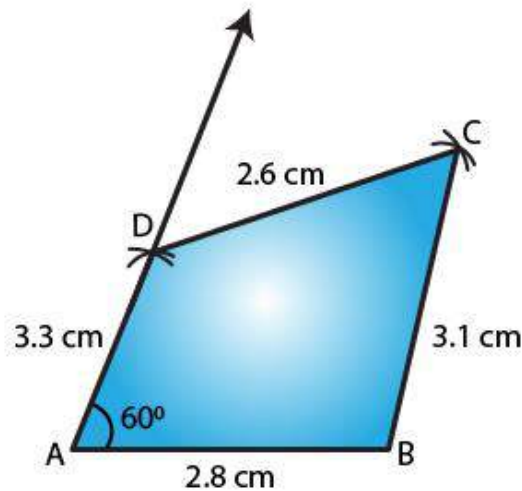
Step 2- Construct an angle of  $60^\circ$  at A.

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



**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 6 cm with B as the center to mark that point as C.

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

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

$AD + DC < AC$

$\therefore$  Construction is not possible.

