EXERCISE 18.3 PAGE NO: 18.8

1. Construct a quadrilateral ABCD in which AB = 3.8 cm, BC = 3.4 cm, CD = 4.5 cm, AD = 5 cm and ∠B = 80°.

Solution:

The given details are AB = 3.8 cm, BC = 3.4 cm, CD = 4.5 cm, AD = 5 cm and ∠B = 80°.

Steps to construct a quadrilateral:

Step 1- Draw a line AB = 3.8cm

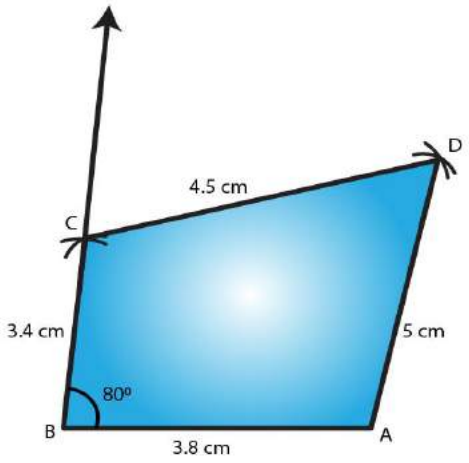
Step 2- Construct and angle of 80º at B.

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 ∠A = 45°.

Solution:

The given details are AB = 8 cm, BC = 8 cm, CD = 10 cm, AD = 10 cm and ∠A = 45°.

Steps to construct a quadrilateral:

Step 1- Draw a line AB = 8cm

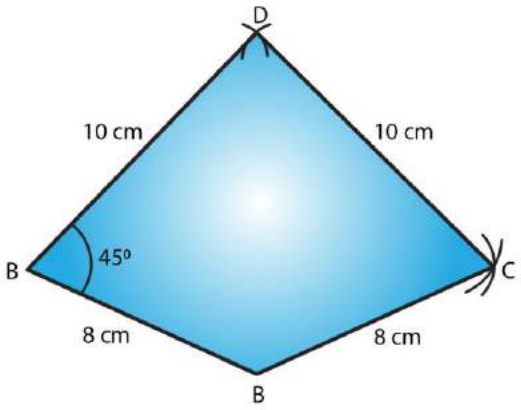
Step 2- Construct and angle of 45º at A.

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, AS = 3.6 cm and ∠C = 120°.

Solution:

The given details are AB = 7.7 cm, BC = 6.8 cm, CD = 5.1 cm, AS = 3.6 cm and ∠C = 120°.

Steps to construct a quadrilateral:

Step 1- Draw a line DC = 5.1cm

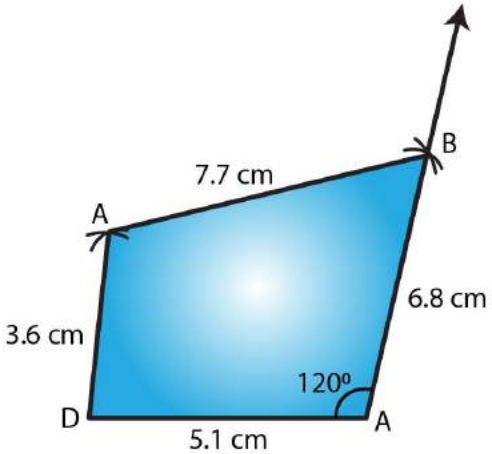
Step 2- Construct and angle of 120° at C.

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.

Step 6- Now join CB, BA and DA



4. Construct a quadrilateral ABCD in which AB = BC = 3 cm, AD = CD = 5 cm and ∠B = 120°.

Solution:

The given details are AB = BC = 3 cm, AD = CD = 5 cm and ∠B = 120°.

Steps to construct a quadrilateral:

Step 1- Draw a line AB = 3cm

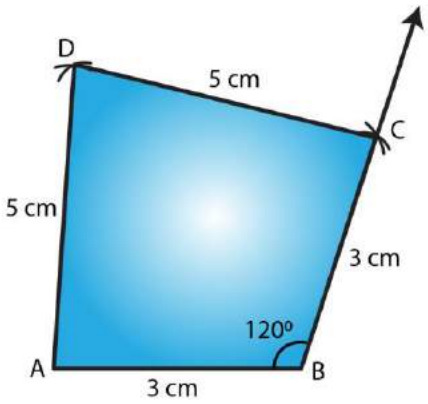
Step 2- Construct and angle of 120º at B.

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 ∠A = 60°.

Solution:

The given details are AB = 2.8 cm, BC = 3.1 cm, CD = 2.6 cm and DA = 3.3 cm and ∠A = 60°.

Steps to construct a quadrilateral:

Step 1- Draw a line AB = 2.8cm

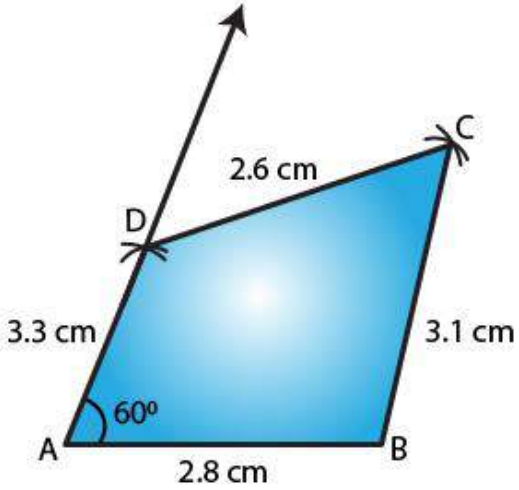
Step 2- Construct and angle of 60º at A.

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 ∠B = 120°.

Solution:

The given details are AB = BC = 6 cm, AD = DC = 4.5 cm and ∠B = 120°.

Steps to construct a quadrilateral:

Step 1- Draw a line AB = 6cm

Step 2- Construct and angle of 120° 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=9cm

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

AD + CD < AC

∴ Construction is not possible.