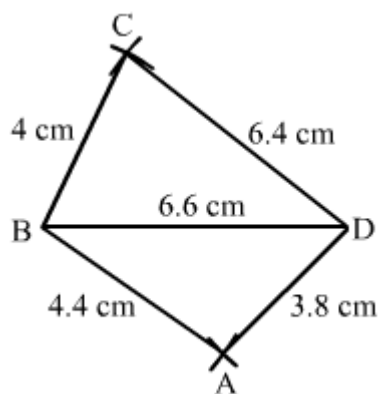


## Exercise 18.1

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.



First, we draw a rough sketch of the quadrilateral ABCD and write down its dimensions along the sides.

We may divide the quadrilateral into two constructible triangles ABD and BCD.

### Steps of Construction:

Step I: Draw  $BD = 6.6$  cm

Step II: With B as the center and radius  $BC = 4$  cm, draw an arc.

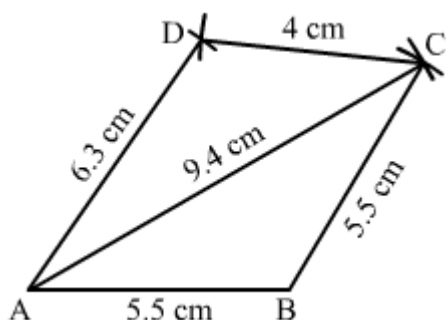
Step III: With D as the center and radius  $6.4$  cm, draw an arc to intersect the arc drawn in Step II at C.

Step IV: With B as the center and radius  $4.4$  cm, draw an arc on the side BD opposite to that of C.

Step V: With D as the center and radius  $3.8$  cm, draw an arc to intersect the arc drawn in Step IV at A.

Step VI: Join BA, DA, BC and CD. The quadrilateral ABCD so obtained is the required quadrilateral.

2. Construct a quadrilateral ABCD such that  $AB = BC = 5.5$  cm,  $CD = 4$  cm,  $DA = 6.3$  cm and  $AC = 9.4$  cm. Measure BD.



### Steps of construction:

Step I: Draw  $AB = 5.5$  cm

Step II: With B as the center and radius  $BC = 5.5$  cm, draw an arc.

Step III: With A as the center and radius  $AC = 9.4$  cm, draw an arc to intersect the arc drawn in Step II at C.

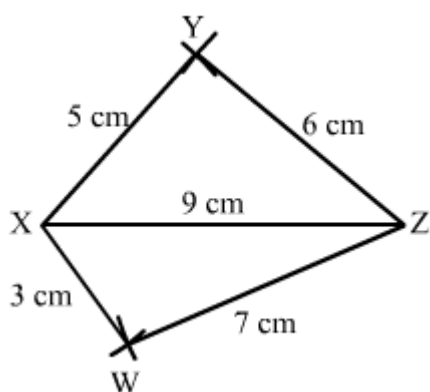
Step IV: With C as the center and radius  $CD = 4$  cm, draw an arc.

Step V: With A as the center and radius  $AD = 6.3$  cm, draw an arc to intersect the arc drawn in Step IV at D.

Step VI: Join DA, BC, AC, and CD.

The quadrilateral ABCD so obtained is the required quadrilateral.

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



### Steps of construction:

Step I: Draw  $XZ = 9$  cm

Step II: With X as the center and radius 5 cm, draw an arc above XZ.

Step III: With Z as the center and radius 6 cm, draw an arc to intersect the arc drawn in Step II at Y above XZ.

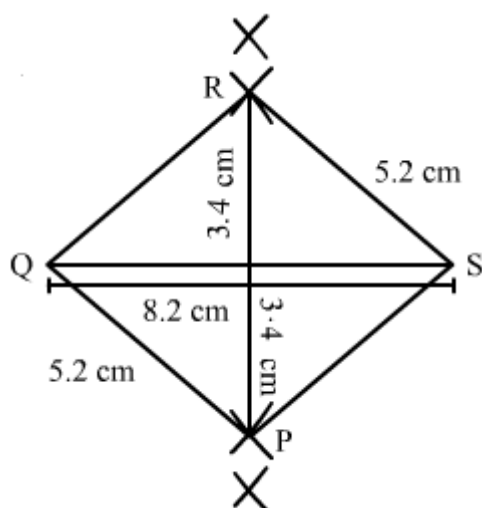
Step IV: With Z as the center and radius 7 cm, draw an arc below XZ.

Step V: With X as the center and radius 3 cm, draw an arc to intersect the arc drawn in Step IV at W below XZ.

Step VI: Join XY, YZ, ZW, and XW.

The quadrilateral WXYZ so obtained is the required quadrilateral.

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



In a parallelogram opposite sides are equal.

Thus, we have to construct a quadrilateral PQRS in which  $PQ = 5.2$  cm,  $PR = 6.8$  cm and  $QS = 8.2$  cm.

#### Steps of construction:

Step I: Draw  $QS = 8.2$  cm

Step II: With Q as the center and radius 5.2 cm, draw an arc.

Step III: With S as the center and radius 5.2 cm, draw an arc to intersect the arc drawn in Step II at C.

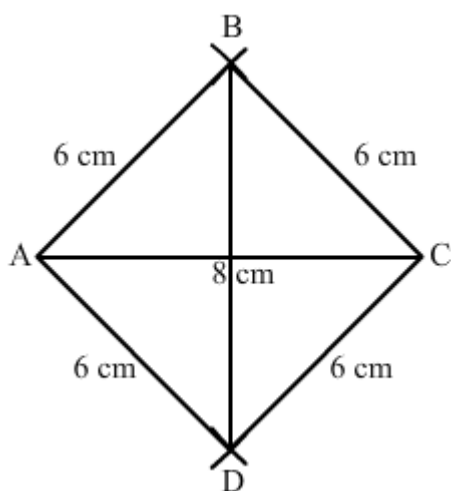
Step IV: With P as the center and radius 6.8 cm.

Step V: With Q as the center and radius 5.2 cm, draw an arc to intersect the arc drawn in Step IV at A.

Step VI: Join QR, QP, PS, and SR.

The quadrilateral PQRS so obtained is the required quadrilateral.

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



**Steps of construction:**

Step 1: Draw  $AC = 8$  cm.

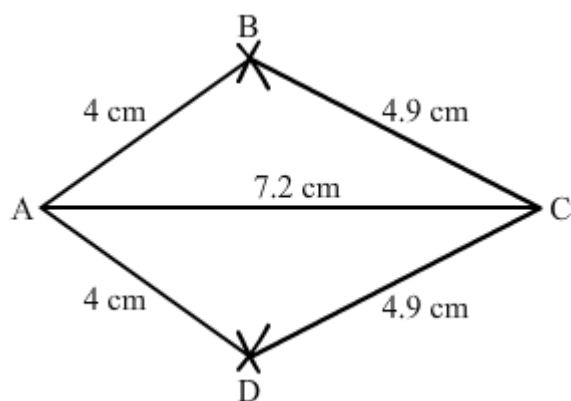
Step 2: With A as the centre and radius = 6 cm, draw arcs on both sides.

Step 3: With C as the center and radius = 6 cm, draw arcs on both sides, intersecting the previous arcs at points B and D.

Step 4: Join  $BD = 8.9$  cm.

Thus, ABCD is the required rhombus.

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



### Steps of construction:

Step I: Draw  $AC = 7.2$  cm.

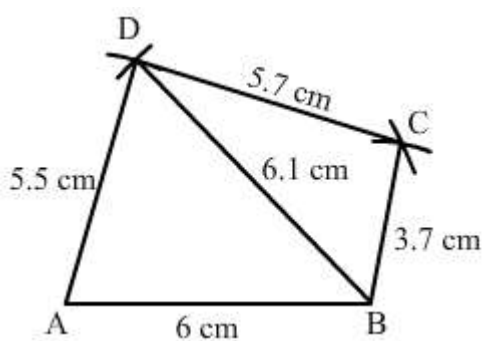
Step II: With A as the centre and radius 4cm, draw arcs on both sides of the line segment AC.

Step III: With C as the centre and radius 4.9 cm, draw arcs on both sides of AC intersecting the previous arcs of step II at B and D.

Step IV: Join BA, DA, BC and CD.

Thus, the quadrilateral ABCD so obtained is the required kite.

**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.**



### Steps of construction:

Step I: Draw  $AB = 6$  cm.

Step II: With A as the center and radius 5.5 cm, draw an arc.

Step III: With B as the center and radius 6.1 cm, draw an arc to intersect the arc drawn in Step II at D.

Step IV: With B as the centre and radius 3.7 cm, draw an arc on the side.

Step V: With D as the centre and radius 5.7 cm, draw an arc to intersect the arc drawn in Step IV at C.

Step VI: Join BD, DA, BC and CD.

The quadrilateral ABCD so obtained is the required quadrilateral.

**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,  $AD + CD < AC$  ).**

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

But here in triangle ACD,

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

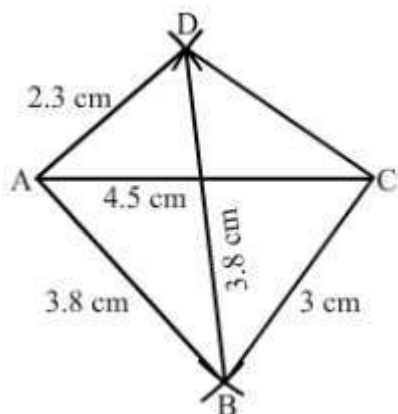
and  $AC = 11$  cm

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

So, the construction is not possible.

## Exercise 18.2

**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.**



**Steps of construction:**

Step I: Draw  $AC = 6$  cm.

Step II: With A as the center and radius 3.8 cm, draw an arc.

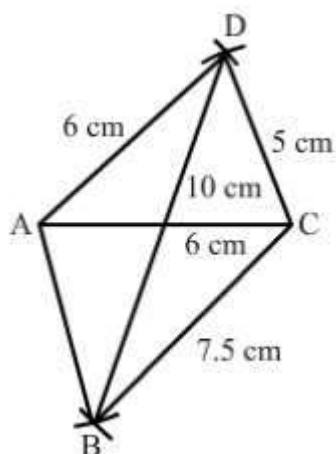
Step III: With C as the center and radius 3.0 cm, draw an arc to intersect the arc drawn in Step II at B.

Step IV: With B as the center and radius 3.8 cm, draw an arc on the other side of AC.

Step V: With A as the center and radius 2.3 cm, draw an arc to intersect the arc drawn in Step IV at D.

Step VI: Join BA, DA, BC and CD to obtain the required quadrilateral.

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



### Steps of construction:

Step I: Draw  $AC = 6$  cm.

Step II: With A as the center and radius 6 cm, draw an arc.

Step III: With C as the center and radius 5 cm, draw an arc to intersect the arc drawn in Step II at D.

Step IV: With D as the center and radius 10 cm, draw an arc on the other side of the line segment AC.

Step V: With C as the center and radius 7.5 cm, draw an arc to intersect the arc drawn in Step IV at B.

Step VI: Join BA, DA, BC and CD to obtain the required quadrilateral.

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

If we consider a triangle ABD from the given data, then

$$AB = 3 \text{ cm}$$

$$BD = 4 \text{ cm}$$

$$AD = 7.5 \text{ cm}$$

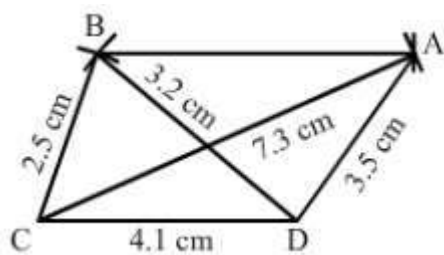
$$AB + BD = 3 + 4 = 7 \text{ cm}$$

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

Therefore, construction is not possible from the given data.



**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.**



**Steps of construction:**

Step I: Draw  $CD = 4.1$  cm.

Step II: With C as the center and radius 7.3 cm, draw an arc.

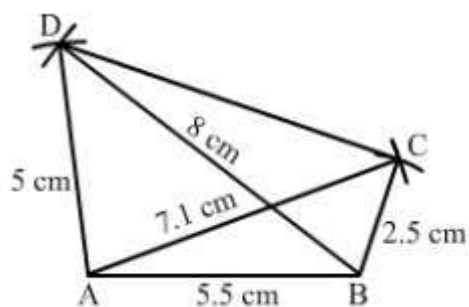
Step III: With D as the center and radius 3.5 cm, draw an arc to intersect the arc drawn in Step II at A.

Step IV: With D as the center and radius 3.2 cm, draw an arc on the other side of AC.

Step V: With C as the center and radius 2.5 cm, draw an arc to intersect the arc drawn in Step IV at B.

Step VI: Join BA, DA, BC and BD and AC to obtain the required quadrilateral.

**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.**



**Steps of construction:**

Step I: Draw  $AB = 5.5$  cm.

Step II: With A as the center and radius 7.1 cm, draw an arc.

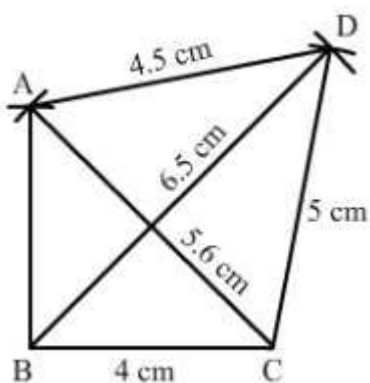
Step III: With B as the center and radius 2.5 cm, draw an arc to intersect the arc drawn in Step II at C.

Step IV: With B as the center and radius 8 cm, draw an arc.

Step V: With A as the center and radius 5 cm, draw an arc to intersect the arc drawn in Step IV at D.

Step VI: Join DA, DB, BC, AC, and CD to obtain the required quadrilateral.

**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.**



**Steps of construction:**

Step I: Draw  $BC = 4$  cm.

Step II: With B as the center and radius 6.5 cm, draw an arc.

Step III: With C as the center and radius 5 cm, draw an arc to intersect the arc drawn in Step II at D.

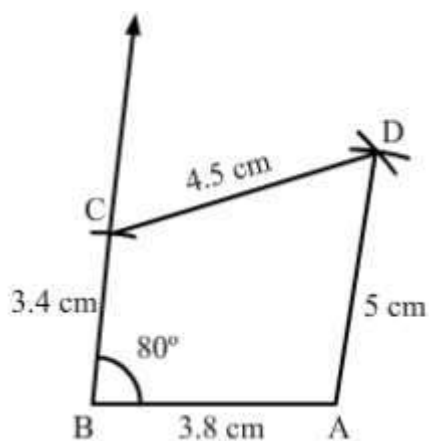
Step IV: With C as the center and radius 5.6 cm, draw an arc on the same side

Step V: With D as the center and radius 4.5 cm, draw an arc to intersect the arc drawn in Step IV at A.

Step VI: Join BA, AC, DA, BD, and CD to obtained the required quadrilateral.

## Exercise 18.3

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



### Steps of construction:

Step I: Draw  $AB = 3.8$  cm.

Step II: Construct  $\angle ABC = 80^\circ$ .

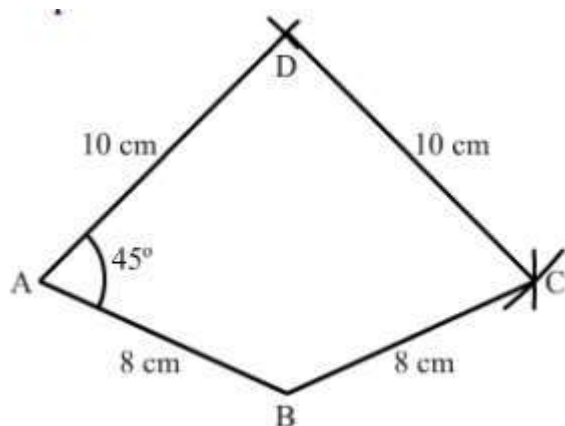
Step III: With B as the center and radius 3.4 cm, cut off  $BC = 3.4$  cm.

Step IV: With C as the center and radius 4.5 cm, draw an arc.

Step V: With A as the center and radius 5.3 cm, draw an arc to intersect the arc drawn in Step IV at D.

Step VI: Join AD, BC and CD to obtain the required quadrilateral.

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



### Steps of construction:

Step I: Draw  $AB = 8 \text{ cm}$ .

Step II: Construct  $\angle BAD = 45^\circ$ .

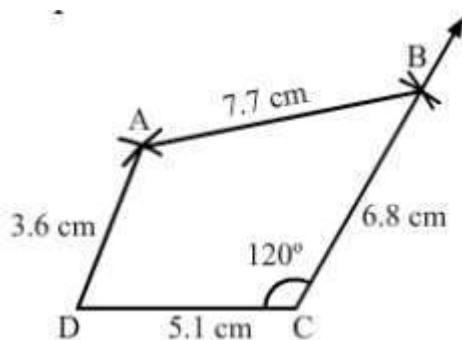
Step III: With A as the centre and radius 10 cm, cut off  $AD = 10 \text{ cm}$ .

Step IV: With D as the centre and radius 10 cm, draw an arc.

Step V: With B as the centre and radius 8 cm, draw an arc to intersect the arc drawn in Step IV at C.

Step VI: Join BC and CD to obtain the required quadrilateral.

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



### Steps of construction:

Step I: Draw  $DC = 5.1 \text{ cm}$ .

Step II: Construct  $\angle DCB = 120^\circ$ .

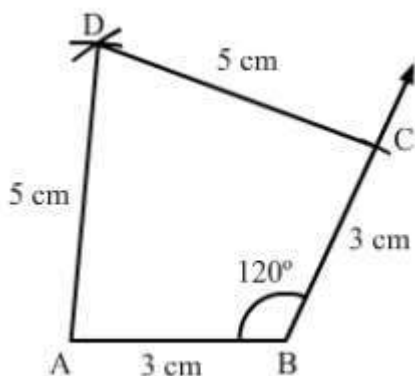
Step III: With C as the center and radius 6.8 cm, cut off  $BC = 6.8 \text{ cm}$ .

Step IV: With B as the center and radius 7.7 cm, draw an arc.

Step V: With D as the center and radius 3.6 cm, draw an arc to intersect the arc drawn in Step IV at A.

Step VI: Join AB and AD to obtain the required quadrilateral.

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



**Steps of construction:**

Step I: Draw  $AB = 3$  cm.

Step II: Construct  $\angle ABC = 120^\circ$ .

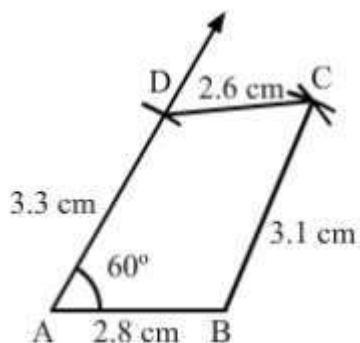
Step III: With B as the center and radius 3 cm, cut off  $BC = 3$  cm.

Step IV: With C as the center and radius 5 cm, draw an arc.

Step V: With A as the center and radius 5 cm, draw an arc to intersect the arc drawn in Step IV at D.

Step VI: Join AD and CD to obtain the required quadrilateral.

**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  $\angle A = 60^\circ$ .**



### Steps of construction:

Step I: Draw  $AB = 2.8$  cm.

Step II: Construct  $\angle BAD = 60^\circ$ .

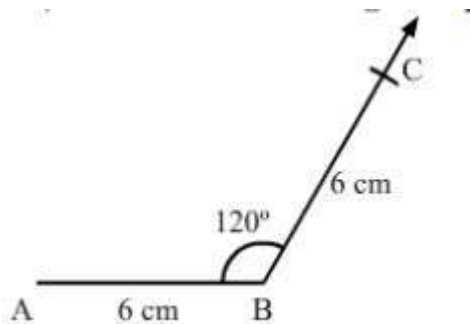
Step III: With A as the center and radius 3.3 cm, cut off  $AD = 3.3$  cm.

Step IV: With D as the center and radius 2.6 cm, draw an arc.

Step V: With B as the center and radius 3.1 cm, draw an arc to intersect the arc drawn in Step IV at C.

Step VI: Join BC and CD to obtain the required quadrilateral.

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



### Steps of construction:

Step I: Draw  $AB = 6$  cm.

Step II: Construct  $\angle ABC = 120^\circ$ .

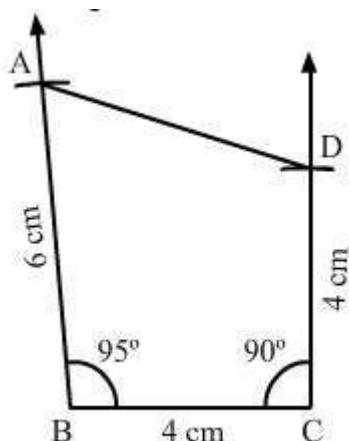
Step III: With B as the centre and radius 6 cm, cut off  $BC = 6$  cm. Now, we can see that AC is about 10.3 cm which is greater than  $AD + CD = 4.5 + 4.5 = 9$  cm.

We know that sum of the lengths of two sides of the triangle is always greater than the third side but here, the sum of AD and CD is less than AC.

So, construction of the given quadrilateral is not possible.

## Exercise 18.4

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



**Steps of construction:**

Step I: Draw  $BC = 4$  cm.

Step II: Construct  $\angle ABC = 95^\circ$  at B.

Step III: With B as the center and radius 6 cm, cut off  $BA = 6$  cm.

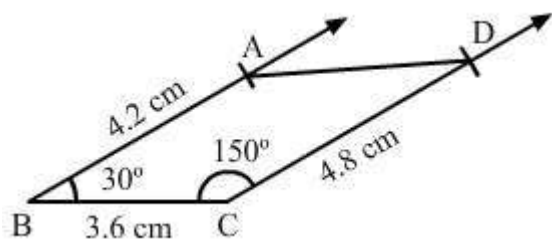
Step IV: Construct  $\angle BCD = 90^\circ$  at C.

Step V: With C as the center and radius 4 cm, cut off  $CD = 4$  cm.

Step VI: Join CD.

The quadrilateral so obtained is the required quadrilateral.

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





**Steps of construction:**

Step I: Draw  $BC = 3.6$  cm.

Step II: Construct  $\angle ABC = 30^\circ$  at B.

Step III: With B as the center and radius 4.2 cm, cut off  $BA = 4.2$  cm.

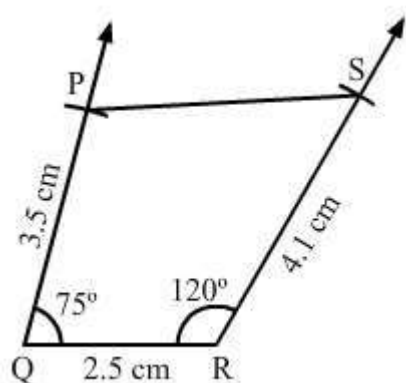
Step IV: Construct  $\angle BCD = 150^\circ$  at C.

Step V: With C as the center and radius 4.8 cm, cut off  $CD = 4.8$  cm.

Step VI: Join AD.

The quadrilateral so obtained is the required quadrilateral.

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

**Steps of construction:**

Step I: Draw  $QR = 2.5$  cm.

Step II: Construct  $\angle PQR = 75^\circ$  at Q.

Step III: With Q as the center and radius 3.5 cm, cut off  $QP = 3.5$  cm.

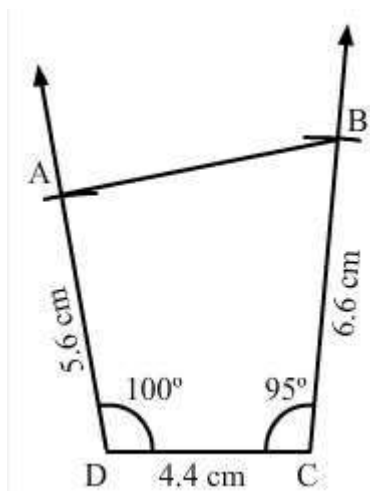
Step IV: Construct  $\angle QRS = 120^\circ$  at R.

Step V: With R as the center and radius 4.1 cm, cut off  $RS = 4.1$  cm.

Step VI: Join PS.

The quadrilateral so obtained is the required quadrilateral.

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



### Steps of construction:

Step I: Draw  $DC = 4.4$  cm.

Step II: Construct  $\angle ADC = 100^\circ$  at D.

Step III: With D as the center and radius 5.6 cm, cut off  $DA = 5.6$  cm.

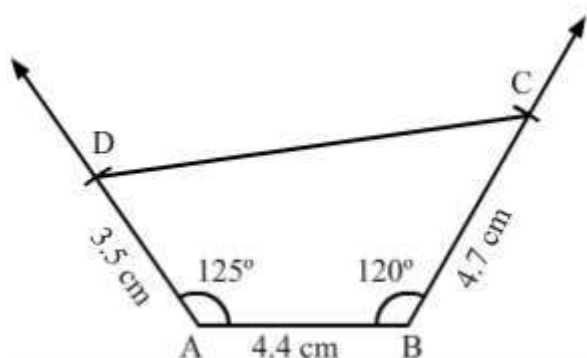
Step IV: Construct  $\angle BCD = 95^\circ$  at C.

Step V: With C as the center and radius 6.6 cm, cut off  $CB = 6.6$  cm.

Step VI: Join AB.

The quadrilateral so obtained is the required quadrilateral.

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



### Steps of construction:

Step I: Draw  $AB = 4.4$  cm.

Step II: Construct  $\angle BAD = 125^\circ$  at A.

Step III: With A as the centre and radius 3.5 cm, cut off  $AD = 3.5$  cm.

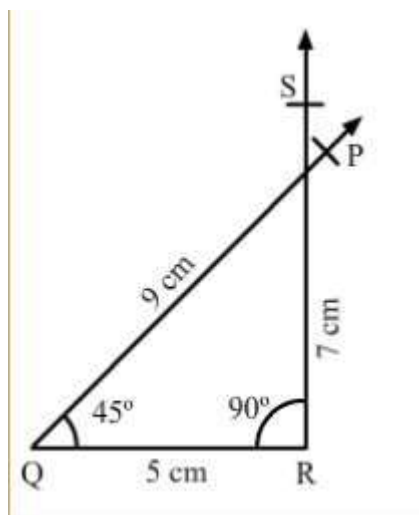
Step IV: Construct  $\angle ABC = 125^\circ$  at B.

Step V: With B as the centre and radius 4.7 cm, cut off  $BC = 4.7$  cm.

Step VI: Join CD.

The quadrilateral so obtained is the required quadrilateral.

**6. Construct a quadrilateral PQRS, in which  $\angle Q = 45^\circ$ ,  $\angle R = 70^\circ$ ,  $QR = 5$  cm,  $PQ = 9$  cm and  $RS = 7$  cm.**



**Steps of construction:**

Step I: Draw  $QR = 5$  cm.

Step II: Construct  $\angle PQR = 45^\circ$  at Q.

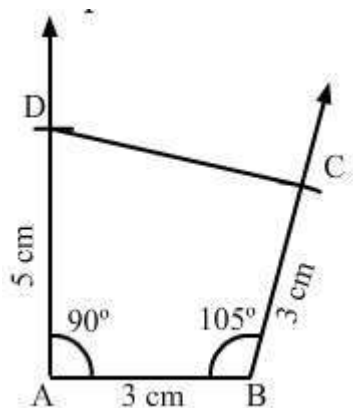
Step III: With Q as the center and radius 9 cm, cut off  $QP = 9$  cm.

Step IV: Construct  $\angle QRS = 90^\circ$  at R.

Step V: With R as the center and radius 7 cm, cut off  $RS = 7$  cm.

Since, the line segment PQ and RS intersect each other, the quadrilateral cannot be constructed.

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



### Steps of construction:

Step I: Draw  $AB = 3$  cm.

Step II: Construct  $\angle DAB = 90^\circ$  at A.

Step III: With A as the center and radius 5 cm, cut off  $AD = 5$  cm.

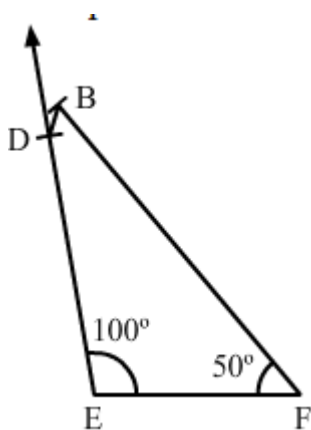
Step IV: Construct  $\angle ABC = 105^\circ$  at B.

Step V: With B as the center and radius 3 cm, cut off  $BC = 3$  cm.

Step VI: Join CD.

The quadrilateral so obtained is the required quadrilateral.

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



### Steps of construction:

Step I: Draw  $EF = 3.5$  cm.

Step II: Construct  $\angle DEF = 100^\circ$  at E.

Step III: With E as the center and radius 4.5 cm, cut off  $DE = 4.5$  cm.

Step IV: Construct  $\angle EFB = 50^\circ$  at F.

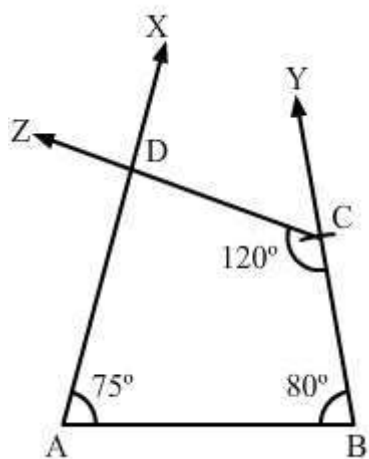
Step V: With F as the center and radius 6.5 cm, cut off  $FB = 6.5$  cm.

Step VI: Join BD.

The quadrilateral so obtained is the required quadrilateral.

## Exercise 18.5

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



**Steps of construction:**

Step I: Draw  $AB = 4$  cm.

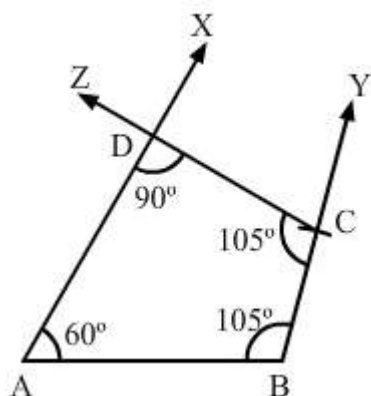
Step II: Construct  $\angle XAB = 75^\circ$  at A and  $\angle ABY = 80^\circ$  at B.

Step III: With B as the center and radius 3 cm, cut off  $BC = 3$  cm.

Step IV: At C, draw  $\angle BCZ = 120^\circ$  such that it meets AX at D.

The quadrilateral so obtained is the required quadrilateral.

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



We know that the sum of all the angles in a quadrilateral is 360.

$$\text{i.e. } \angle A + \angle B + \angle C + \angle D = 360^\circ$$

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

### Steps of construction:

Step I: Draw  $AB = 5.5$  cm.

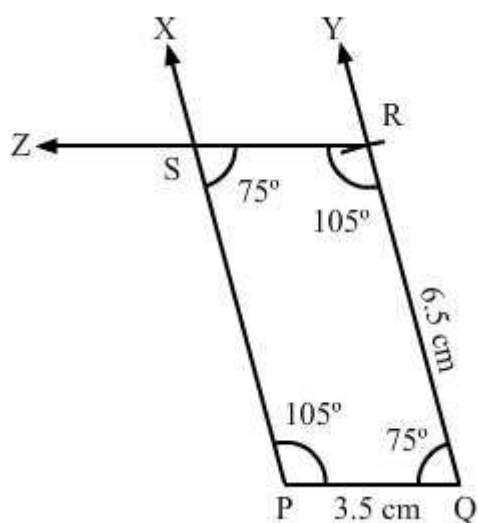
Step II: Construct  $\angle XAB = 60^\circ$  at A and  $\angle ABY = 105^\circ$ .

Step III: With B as the center and radius 3.7 cm, cut off  $BC = 3.7$  cm.

Step IV: At C, draw  $\angle BCZ = 105^\circ$  such that it meets AX at D.

The quadrilateral so obtained is the required quadrilateral.

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



We know that the sum of all the angles in a quadrilateral is 360.

$$\text{i.e., } \angle P + \angle Q + \angle R + \angle S = 360^\circ$$

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

### Steps of construction:

Step I: Draw  $PQ = 3.5$  cm.

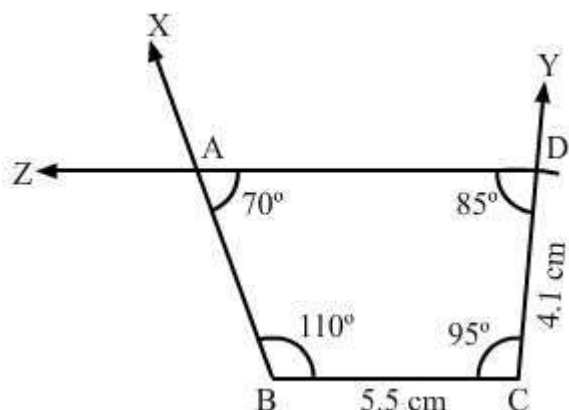
Step II: Construct  $\angle XPQ = 75^\circ$  at P and  $\angle PQY = 75^\circ$  at Q.

Step III: With Q as the center and radius 6.5 cm, cut off QR = 6.5

Step IV: At R, draw  $\angle QRZ = 105^\circ$  such that it meets PX at S.

The quadrilateral so obtained is the required quadrilateral.

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



We know that the sum of all the angles in a quadrilateral is 360. i.e.

$$\text{i.e. } \angle A + \angle B + \angle C + \angle D = 360^\circ$$

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

**Steps of construction:**

Step I: Draw BC = 5.5 cm.

Step II: Construct  $\angle XBC = 110^\circ$  at B and  $\angle BCY = 95^\circ$ .

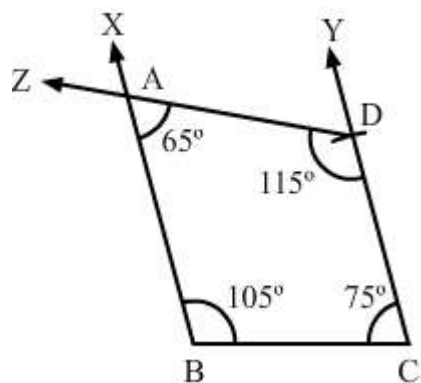
Step III: With C as the center and radius 4.1 cm, cut off CD = 4.1 cm.

Step IV: At D, draw  $\angle CDZ = 85^\circ$  such that it meets BY at A.

The quadrilateral so obtained is the required quadrilateral.

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





We know that the sum of all the angles in a quadrilateral is 360. i.e

$$\text{i.e. } \angle A + \angle B + \angle C + \angle D = 360^\circ$$

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

### Steps of Construction:

Step I: Draw  $BC = 5.7$  cm.

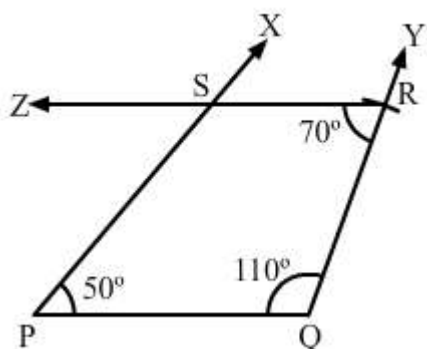
Step II: Construct  $\angle XBC = 105^\circ$  at B and  $\angle BCY = 105^\circ$  at C.

Step III: With C as the center and radius 6.8 cm, cut off  $CD = 6.8$  cm.

Step IV: At D, draw  $\angle CDZ = 115^\circ$  such that it meets BY at A.

The quadrilateral so obtained is the required quadrilateral.

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



### Steps of construction:

Step I: Draw  $PQ = 4$  cm.

Step II: Construct  $\angle XPQ = 50^\circ$  at P and  $\angle PQY = 110^\circ$  at Q.

Step III: With Q as the center and radius 5 cm, cut off  $QR = 5$  cm.

Step IV: At R, draw  $\angle QRZ = 70^\circ$  such that it meets PX at S.

The quadrilateral so obtained is the required quadrilateral.