

EXERCISE 18.5

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

Solution:

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

Steps to construct a quadrilateral:

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

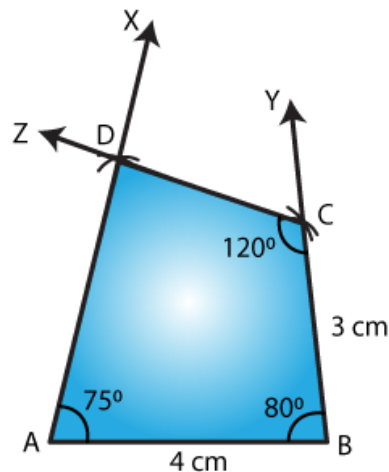
Step 2- Construct an angle of 75° at A.

Step 3- Construct an angle of 80° at B.

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

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

Step 6- Now join BC, CD and DA



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

Solution:

The given details are $AB = 5.5\text{ cm}$, $BC = 3.7\text{ cm}$, $\angle A = 60^\circ$, $\angle B = 105^\circ$ 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 $AB = 5.5\text{ cm}$

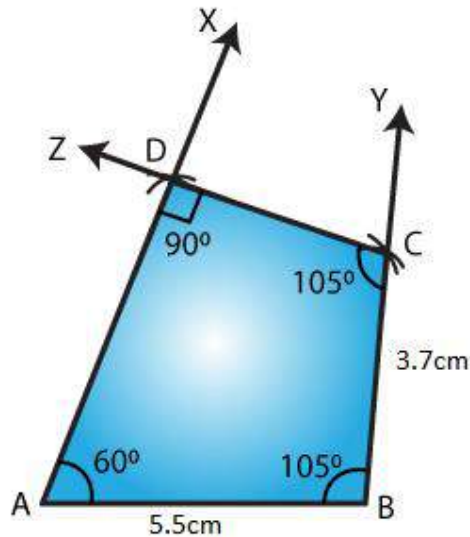
Step 2- Construct an angle of 60° at A.

Step 3- Construct an angle of 105° 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° at C such that it meets the line segment AX, mark that point as D.

Step 6- Now join BC, CD and DA



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

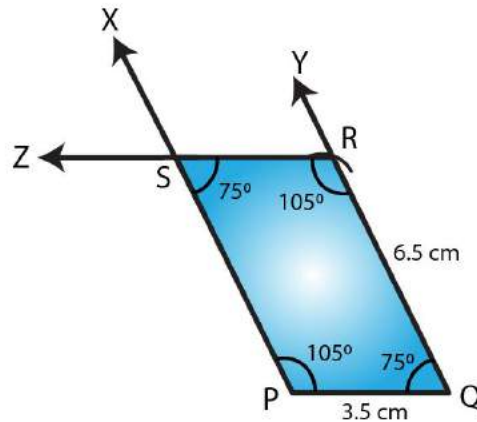
Step 2- Construct an angle of 105° at P.

Step 3- Construct an angle of 75° 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° at R such that it meets the line segment PX, mark that point as S.

Step 6- Now join QR, RS and PS



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

Solution:

The given details are $BC = 5.5 \text{ cm}$, $CD = 4.1 \text{ cm}$, $\angle A = 70^\circ$, $\angle B = 110^\circ$ 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 $BC = 5.5 \text{ cm}$

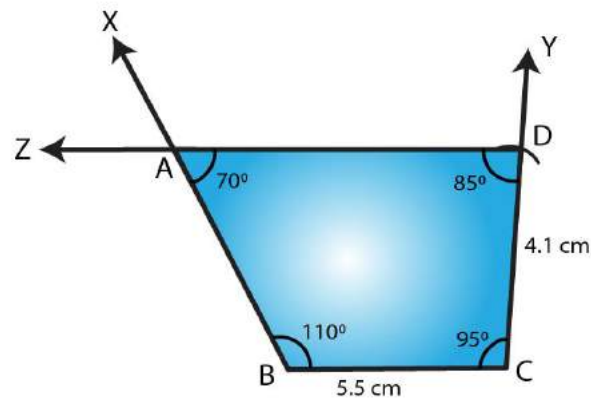
Step 2- Construct an angle of 110° at B.

Step 3- Construct an angle of 95° at C.

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

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

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 = 5.7cm

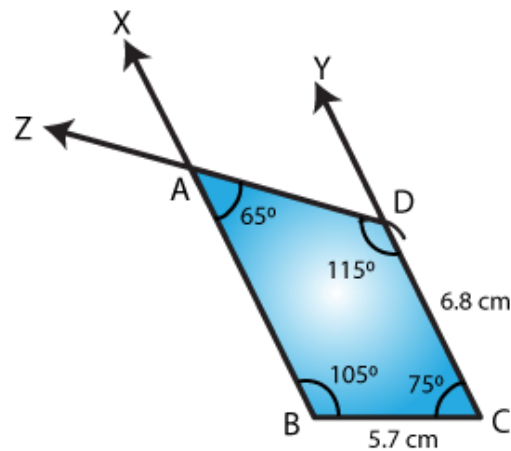
Step 2- Construct an angle of 105° at B.

Step 3- Construct an angle of 75° 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° at D such that it meets the line segment BX, mark that point as A.

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° at P.

Step 3- Construct an angle of 110° 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° at R such that it meets the line segment PX, mark that point as S.

Step 6- Now join QR, RS and PS

