Construction of Triangles

Exercise 30:

Solution 1:

Name of the triangle	Names of the sides of the triangle	Names of the angles of the triangle
ΔABC	AB, BC, AC	∠A, ∠B, ∠C
ΔXYZ	XY, YZ, XZ	∠X, ∠Y, ∠Z
ΔVKS	VK, KS, VS	∠V, ∠K, ∠S

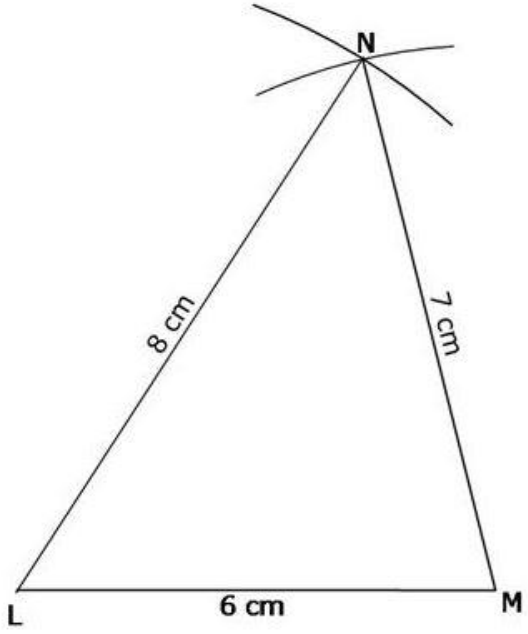
Exercise 31:

Solution 1:

Steps of construction:

1. Draw $\overline{LM}$ of length 6 cm.
2. Taking a radius of 8 cm, draw an arc of cirde with centre L.
3. Draw another arc of circle with centre M and radius 7 cm to intersect the first arc. Name the point of intersection N.
4. Join the points L and N. Join the points M and N.

Hence, ΔLMN is the required triangle.

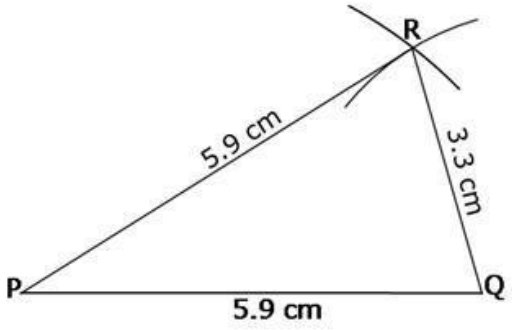


Solution 2:

Steps of construction:

1. Draw PQ of length 5.9 cm.
2. Taking a radius of 5.9 cm, draw an arc of circle with centre P.
3. Draw another arc of circle with centre Q and radius 3.3 cm to intersect the first arc. Name the point of intersection R.
4. Join the points P and R. Join the points Q and R.

Hence, ΔPQR is the required triangle.

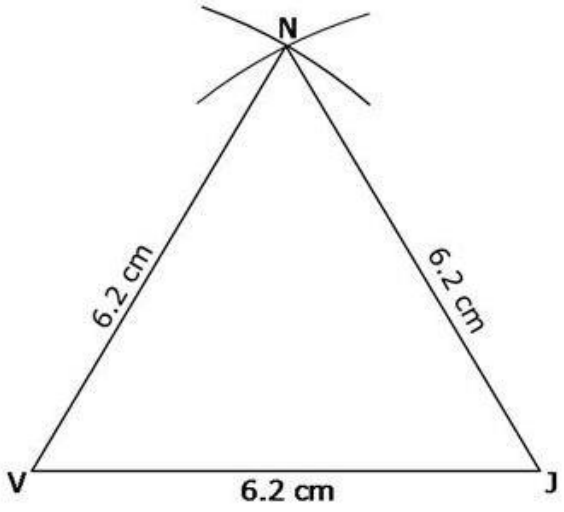


Solution 3:

Steps of construction:

1. Draw $\overline{VJ}$ of length 6.2 cm.
2. Taking a radius of 6.2 cm, draw an arc of circle with centre V.
3. Draw another arc of circle with centre J and radius 6.2 cm to intersect the first arc. Name the point of intersection N.
4. Join the points V and N. Join the points J and N.

Hence, ΔVJN is the required triangle.



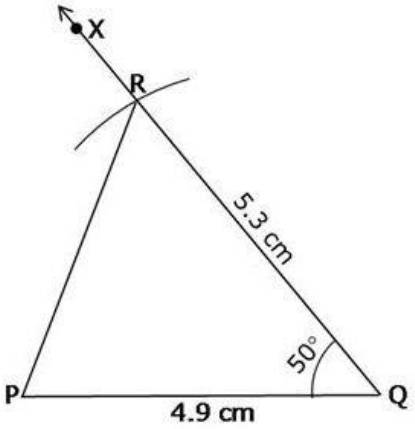
Exercise 32:

Solution 1:

Steps of construction:

1. Draw $\overline{PQ}$ of length 4.9 cm.
2. Placing a protractor at vertex Q on $\overline{PQ}$, draw $\angle XQP$ of measure 50°.
3. Taking Q as centre and 5.3 cm as radius, draw an arc to cut ray QX at R.
4. Join the points P and R.

Hence, ΔPQR is the required triangle.

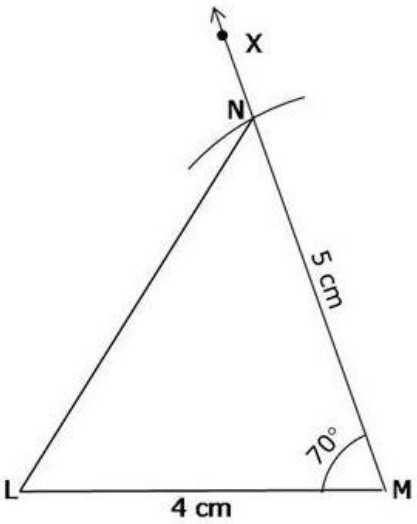


Solution 2:

Steps of construction:

1. Draw a seg LM of length 4 cm.
2. Placing protractor at vertex M on seg LM, draw $\angle XML$ of measure 70°.
3. Taking M as centre and 5 cm as radius, draw an arc to cut ray XM at N.
4. Join the points L and N.

Hence, ΔLMN is the required triangle.

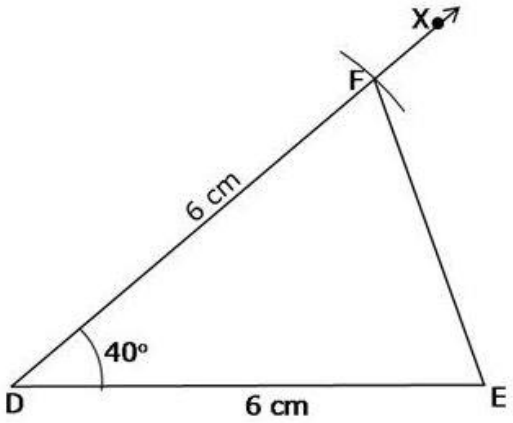


Solution 3:

Steps of construction:

1. Draw $\overline{DE}$ of length 6 cm.
2. Placing a protractor at vertex D on $\overline{DE}$, draw $\angle XDE$ of measure 40°.
3. Taking D as centre and 6 cm as radius, draw an arc to cut ray XD at F.
4. Join the points F and E.

Hence, ΔDEF is the required triangle.

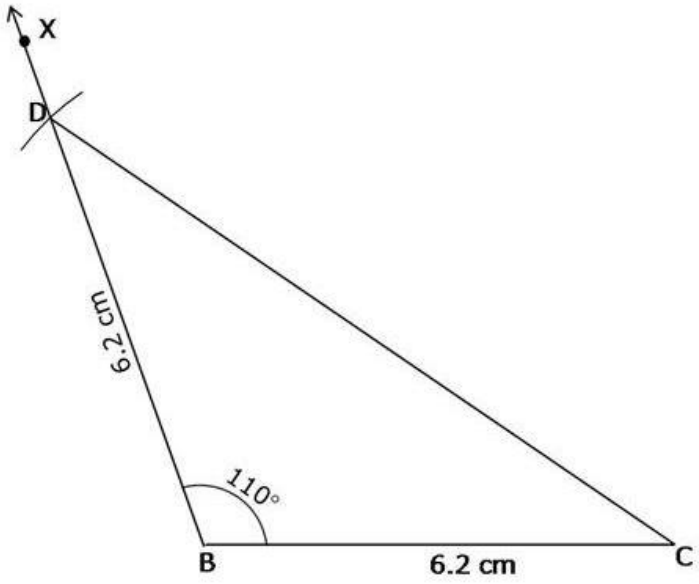


Solution 4:

Steps of construction:

1. Draw $\overline{BC}$ of length 6.2 cm.
2. Placing a protractor at vertex B on $\overline{BC}$, draw $\angle XBC$ of measure 110°.
3. Taking B as centre and 6.2 cm as radius, draw an arc to cut ray XB at D.
4. Join the points D and C.

Hence, ΔBCD is the required triangle.



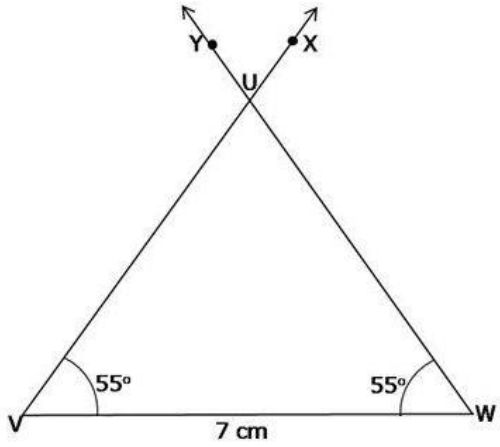
Exercise 33:

Solution 1:

Steps of construction:

1. Draw $\overline{VW}$ of length 7 cm.
2. Placing a protractor at vertex V on $\overline{VW}$, draw $\angle XVW$ of measure 55°.
3. Placing a protractor at vertex W on $\overline{VW}$, draw $\angle YWV$ of measure 55°.
4. The point at which $\overrightarrow{VX}$ and $\overrightarrow{WY}$ intersect is U.

Hence, ΔUVW is the required triangle.

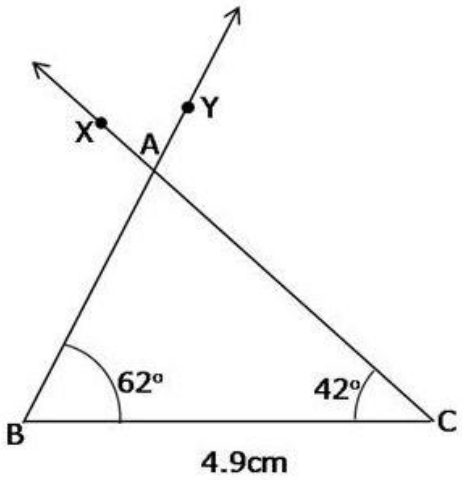


Solution 2:

Steps of construction:

1. Draw $\overline{BC}$ of length 4.9 cm.
2. Placing protractor at vertex B on $\overline{BC}$, draw $\angle YBC$ of measure 62°.
3. Placing protractor at vertex C on $\overline{BC}$, draw $\angle XCB$ of measure 42°.
4. The point at which $\overrightarrow{CX}$ and $\overrightarrow{BY}$ intersect is A.

Hence, ΔABC is the required triangle.

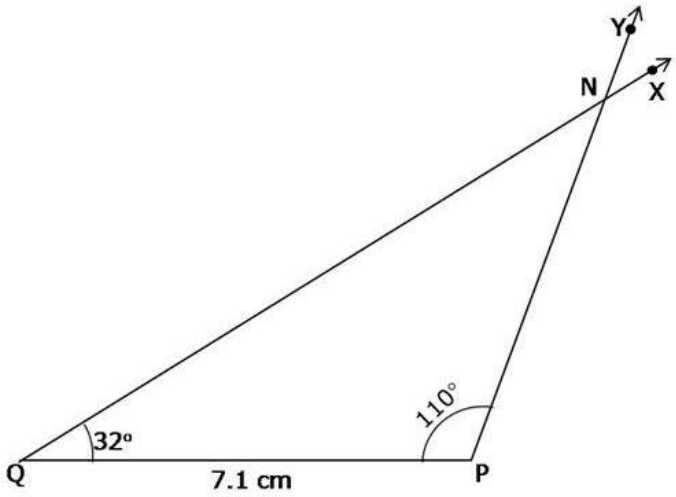


Solution 3:

Steps of construction:

1. Draw $\overline{QP}$ of length 7.1 cm.
2. Placing protractor at vertex Q on $\overline{QP}$, draw $\angle XQP$ of measure 32°.
3. Placing protractor at vertex P on $\overline{QP}$, draw $\angle YPQ$ of measure 110°.
4. The point at which $\overrightarrow{QX}$ and $\overrightarrow{PY}$ intersect is N.

Hence, the required ΔNQP has been constructed.



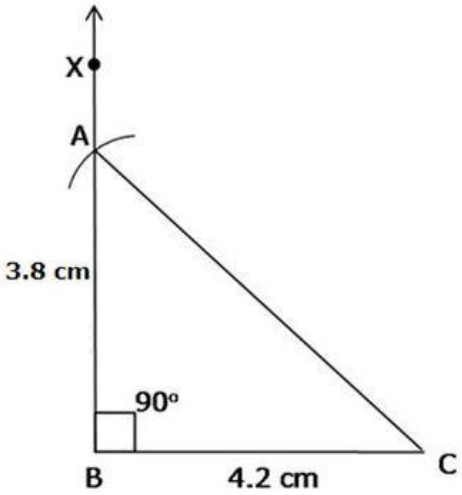
Exercise 34:

Solution 1:

Steps of construction:

1. Draw $\overline{BC}$ of length 4.2 cm.
2. Placing a protractor at vertex B on $\overline{BC}$, draw $\overrightarrow{BX}$ so that $m\angle B = 90°$.
3. Taking B as centre and radius equal to 3.8 cm, draw an arc to cut $\overrightarrow{BX}$ at A.
4. Join points A and C.

Hence, ΔABC is the required triangle.

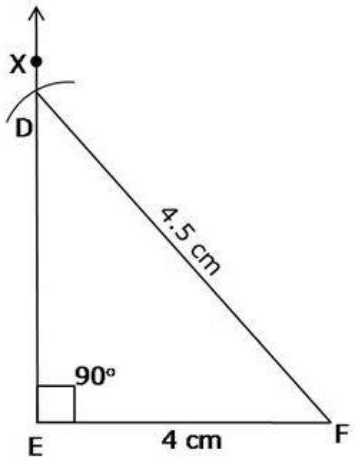


Solution 2:

Steps of construction:

1. Draw $\overline{EF}$ of length 4 cm.
2. Placing a protractor at vertex E on $\overline{EF}$, draw $\overrightarrow{EX}$ so that $m\angle E = 90°$.
3. Taking F as centre and radius equal to 4.5 cm, draw an arc to cut $\overrightarrow{EX}$ at D.
4. Join points D and F.

Hence, ΔDEF is the required triangle.



Solution 3:

Steps of construction:

1. Draw $\overline{QR}$ of length 4 cm.
2. Placing a protractor at vertex Q on $\overline{QR}$, draw $\overrightarrow{QX}$ so that $m\angle Q = 90°$.
3. Taking R as centre and radius equal to 6 cm, draw an arc to cut $\overrightarrow{QX}$ at P.
4. Join points P and R.

Hence, ΔPQR is the required triangle.