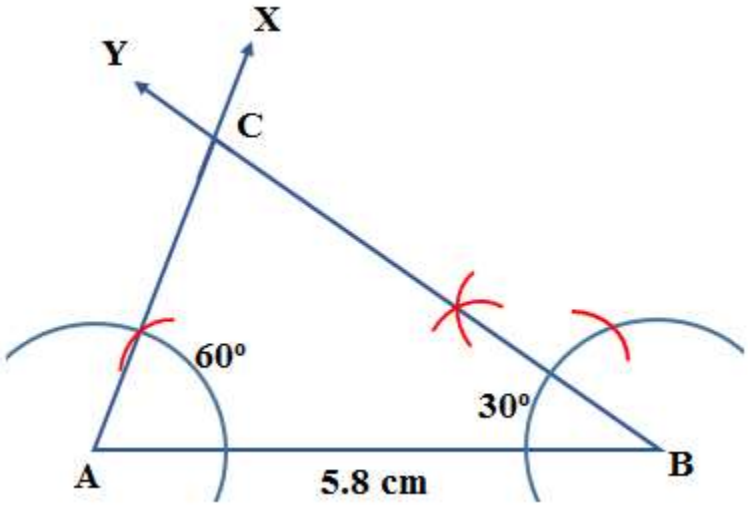
Practical Geometry: Exercise 10.4

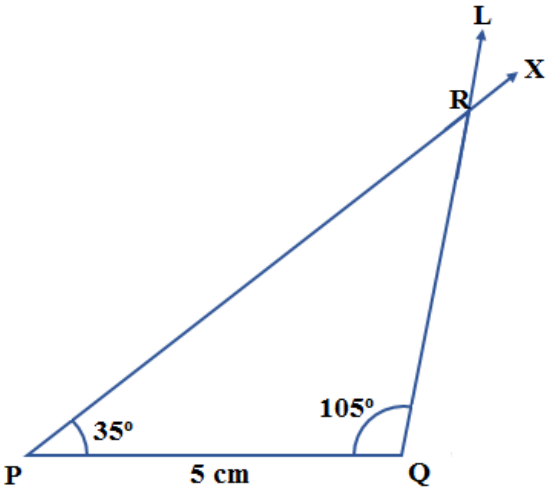
Q.1 Construct ΔABC, given m ∠A = 60°, m ∠B = 30° and AB = 5.8 cm.
Sol:



Construction Steps:
1. Firstly, draw a line segment AB of length 5.8 cm with help of pencil and ruler.
2. Now, at point A, make an angle of 60° with help of compass and draw the ray AX.
3. And at point B, make an angle of 30° with help of compass and draw the ray BY
4. These two rays AX and BY intersect each other at the point C.

Thus, ΔABC is the required triangle.

Q.2 Construct ΔPQR if PQ = 5 cm, m∠PQR = 105° and m∠QRP = 40°.
(Hint: Recall angle-sum property of a triangle).
Sol: Since, given side PQ = 5 cm, so we need to construct angles at points P and Q in construction of ΔPQR.
Since, Sum of the angles of a triangle is 180°.
∠Q + ∠R + ∠P = 180°
105° + 40° + ∠P = 180°
145° + ∠P = 180°
∠P = 180°– 145°
∠P = 35°
So, ∠P = 35°



Construction Steps:
1. Firstly, draw a line segment PQ of length 5 cm with help of ruler and pencil.
2. Now, at point P, make an angle of 35° with help of protector and draw a ray PX.
3. And at point Q, make an angle of = 105° with help of protector and draw a ray QY.
4. Now the two rays PX and QY intersect each other at the point R.

Thus, ΔPQR is the required triangle.

Q.3 Examine whether you can construct ΔDEF such that EF = 7.2 cm, m∠E = 110° and m∠F = 80°. Justify your answer.

Sol:

Given: EF = 7.2 cm, ∠E = 110° and ∠F = 80°

Since, sum of the angles of a triangle is 180°.

So,

∠D + ∠E + ∠F = 180°

∠D + 110°+ 80°= 180°

∠D + 190° = 180°

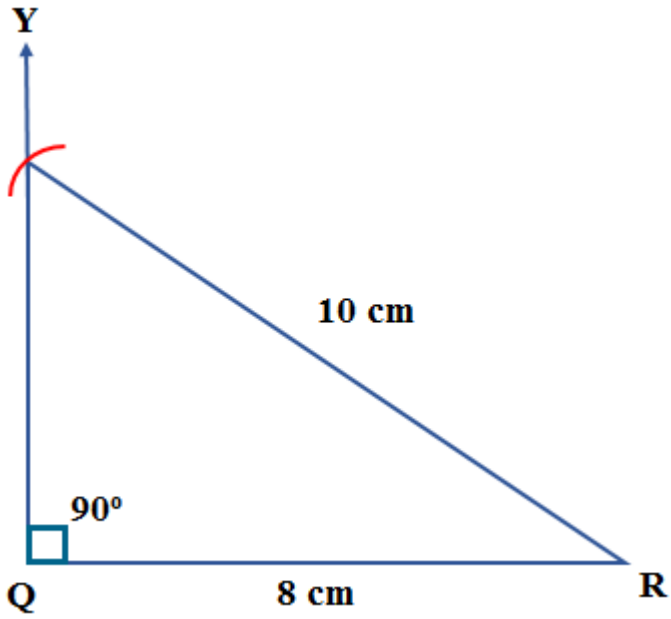
∠D = 180°– 190°

∠D = -10°

From above calculation, the sum of two angles is 190° is greater than 180°. So, construction of this triangle is not possible.

Q.4 Construct the Construct the right angled ΔPQR, where m∠Q = 90°, QR = 8cm and PR = 10 cm.

Sol:



Construction Steps:
1. Firstly, draw a line segment QR of length 8 cm with help of pencil and ruler.
2. Now, at point Q, make an angle of 90° with help of compass and draw a ray QX.
3. Take R as a center and draw an arc of radius 10 cm which cuts the ray QX at P.
4. Now, join P and R.

Thus, ΔPQR is the required right angled triangle.