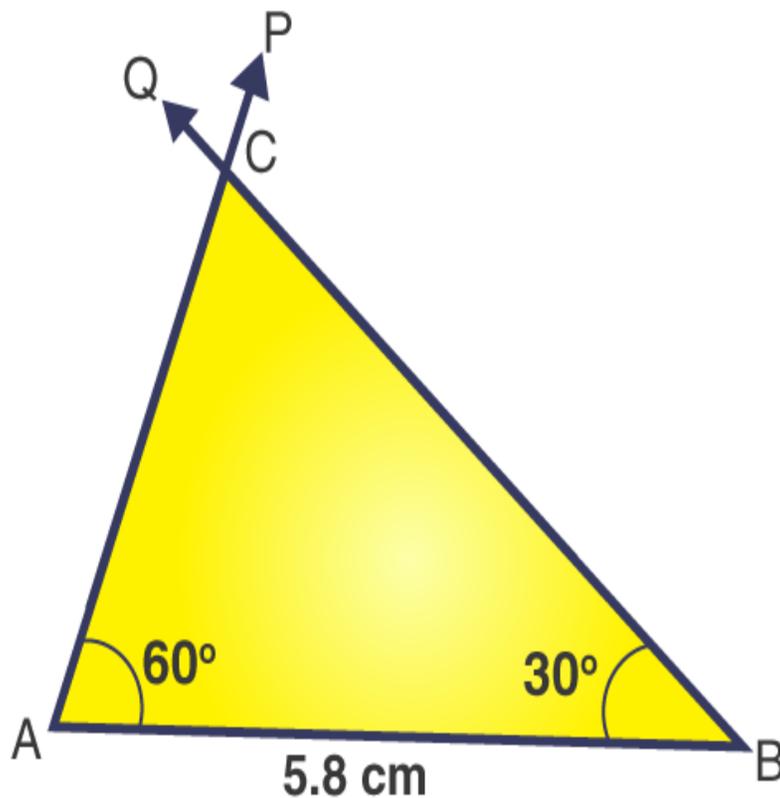


**EXERCISE 10.4**

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1. Construct  $\Delta ABC$ , given  $m \angle A = 60^\circ$ ,  $m \angle B = 30^\circ$  and  $AB = 5.8$  cm.

Solution:-



Steps of construction:

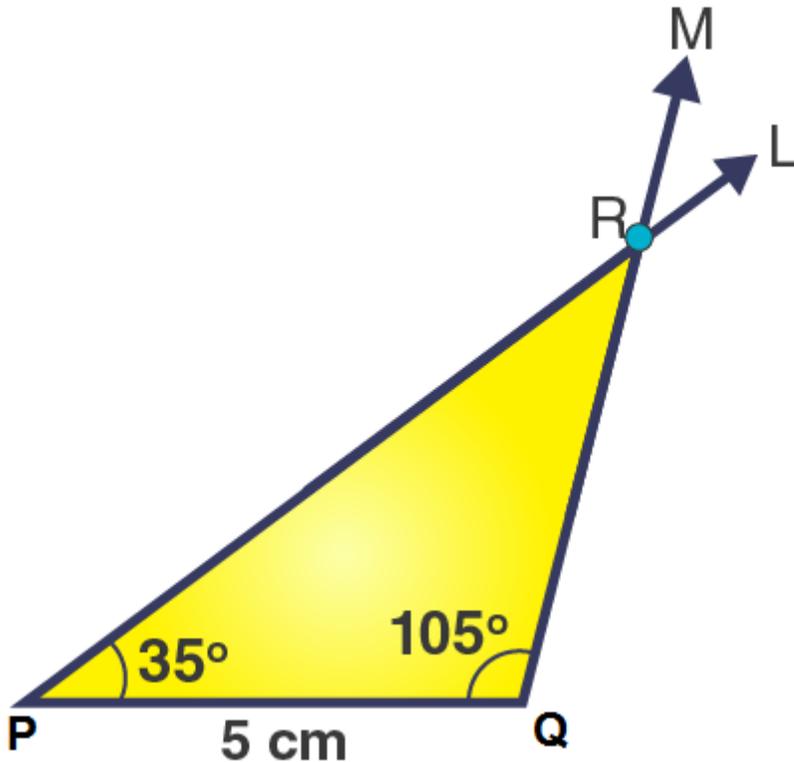
1. Draw a line segment  $AB = 5.8$  cm.
2. At point A, draw a ray P to making an angle of  $60^\circ$ , i.e.,  $\angle PAB = 60^\circ$ .
3. At point B, draw a ray Q to making an angle of  $30^\circ$ , i.e.,  $\angle QBA = 30^\circ$ .
4. Now, the two rays – AP and BQ – intersect at point C.

Then,  $\Delta ABC$  is the required triangle.

2. Construct  $\Delta PQR$  if  $PQ = 5$  cm,  $m\angle PQR = 105^\circ$  and  $m\angle QRP = 40^\circ$ .

(Hint: Recall angle-sum property of a triangle).

Solution:-



We know that the sum of the angles of a triangle is  $180^\circ$ .

$$\therefore \angle PQR + \angle QRP + \angle RPQ = 180^\circ$$

$$= 105^\circ + 40^\circ + \angle RPQ = 180^\circ$$

$$= 145^\circ + \angle RPQ = 180^\circ$$

$$= \angle RPQ = 180^\circ - 145^\circ$$

$$= \angle RPQ = 35^\circ$$

Hence, the measures of  $\angle RPQ$  is  $35^\circ$ .

Steps of construction

1. Draw a line segment  $PQ = 5$  cm.
2. At point P, draw a ray L to making an angle of  $105^\circ$ , i.e.,  $\angle LPQ = 35^\circ$ .

3. At point Q, draw a ray M to making an angle of  $40^\circ$ , i.e.,  $\angle MQP = 105^\circ$ .

4. Now, the two rays – PL and QM – intersect at point R.

Then,  $\Delta PQR$  is the required triangle.

**3. Examine whether you can construct  $\Delta DEF$ , such that  $EF = 7.2$  cm,  $m\angle E = 110^\circ$  and  $m\angle F = 80^\circ$ . Justify your answer.**

**Solution:-**

From the question, it is given that

$$EF = 7.2 \text{ cm}$$

$$\angle E = 110^\circ$$

$$\angle F = 80^\circ$$

Now, we have to check whether it is possible to construct  $\Delta DEF$  from the given values.

We know that the sum of the angles of a triangle is  $180^\circ$ .

Then,

$$\angle D + \angle E + \angle F = 180^\circ$$

$$\angle D + 110^\circ + 80^\circ = 180^\circ$$

$$\angle D + 190^\circ = 180^\circ$$

$$\angle D = 180^\circ - 190^\circ$$

$$\angle D = -10^\circ$$

We may observe that the sum of two angles is  $190^\circ$  is greater than  $180^\circ$ . So, it is not possible to construct a triangle.