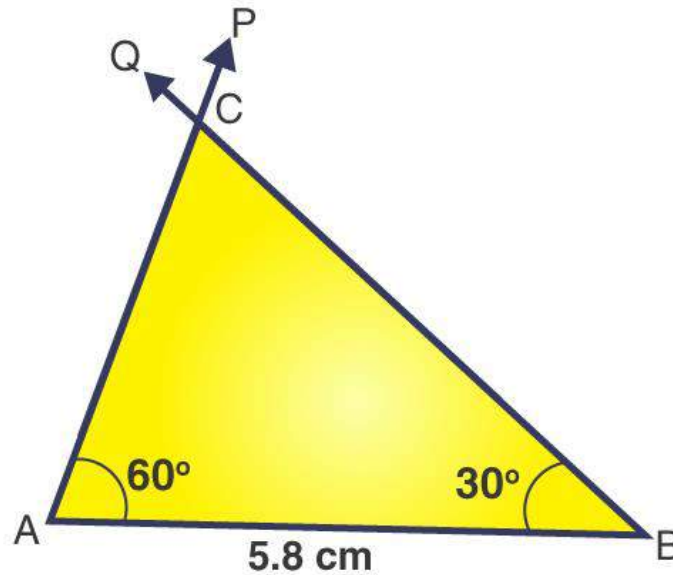


EXERCISE 10.4

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

Solution:-



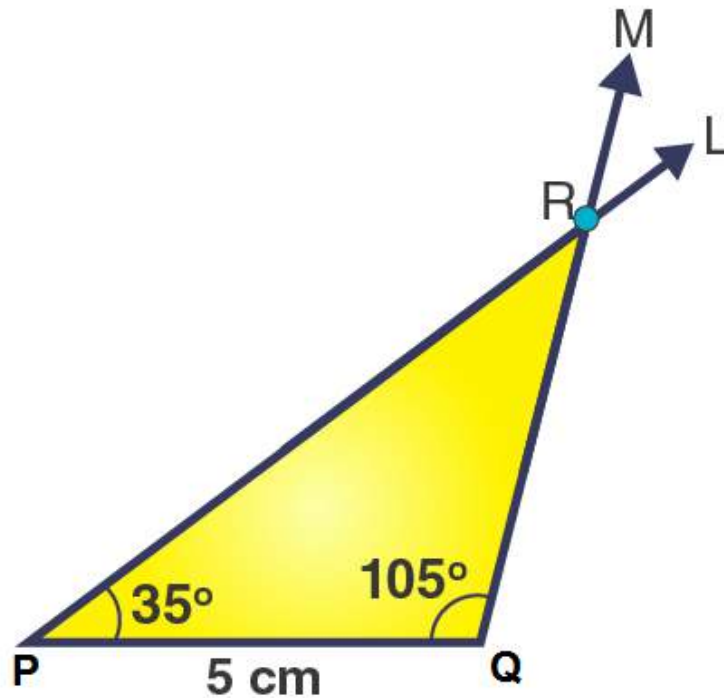
Steps of construction:

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

2. Construct ΔPQR 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° .

$$\begin{aligned} \therefore \angle PQR + \angle QRP + \angle RPQ &= 180^\circ \\ &= 105^\circ + 40^\circ + \angle RPQ = 180^\circ \\ &= 145^\circ + \angle RPQ = 180^\circ \\ &= \angle RPQ = 180^\circ - 145^\circ \\ &= \angle RPQ = 35^\circ \end{aligned}$$

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

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° i.e. $\angle LPQ = 105^\circ$.
3. At point Q, draw a ray M to making an angle of 40° i.e. $\angle MQP = 40^\circ$.
4. Now the two rays PL and QM intersect at the point R.

Then, ΔPQR is the required triangle.

3. Examine whether you can construct ΔDEF 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 $\triangle DEF$ from the given values. We know that the sum of the angles of a triangle is 180° .

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° is greater than 180° . So, it is not possible to construct a triangle.

