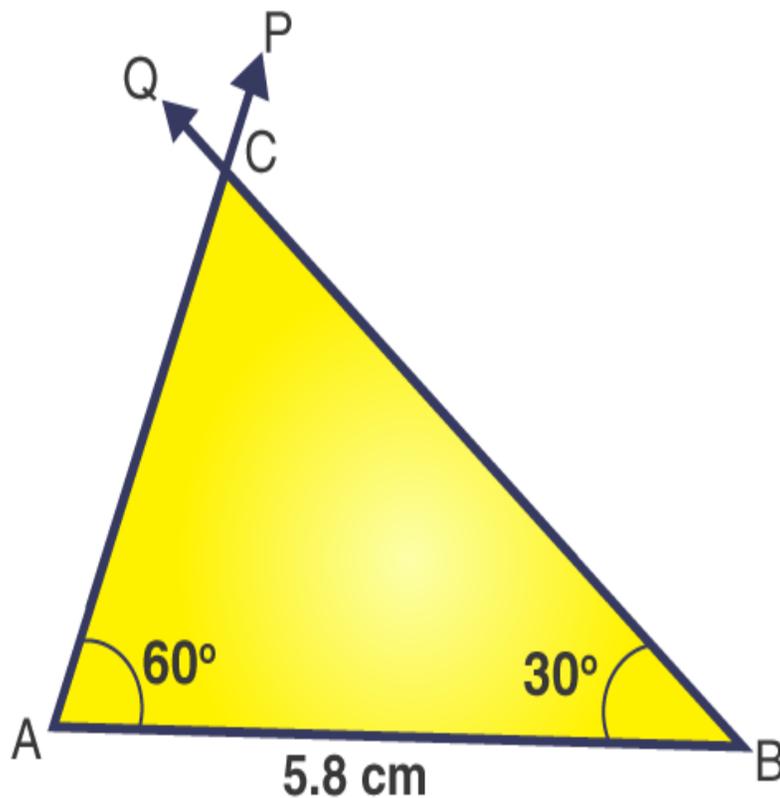


EXERCISE 10.4

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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:

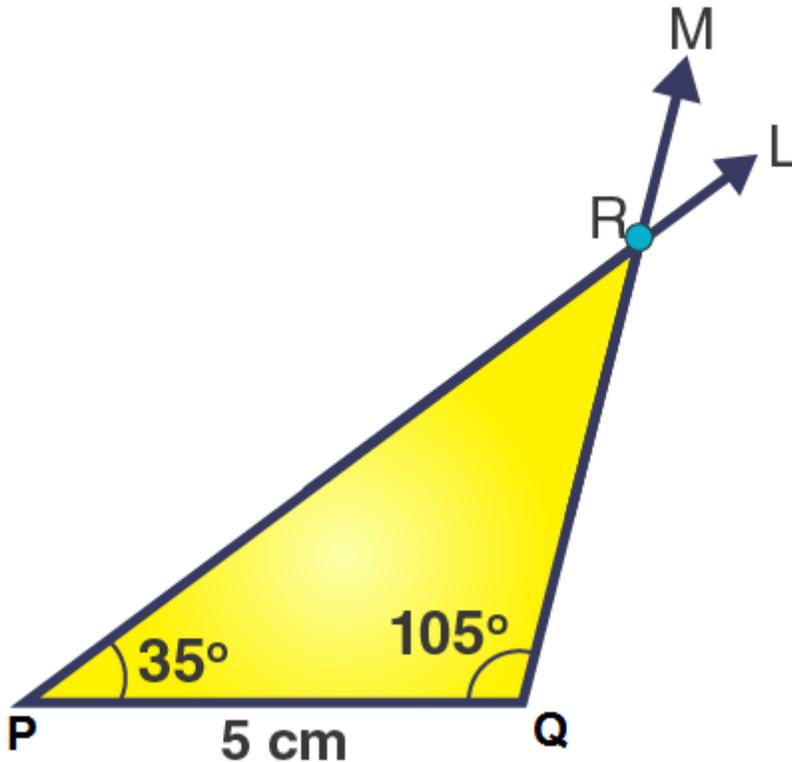
1. Draw a line segment $AB = 5.8$ cm.
2. At point A, draw a ray P to making an angle of 60° , i.e., $\angle PAB = 60^\circ$.
3. At point B, draw a ray Q to making an angle of 30° , i.e., $\angle QBA = 30^\circ$.
4. Now, the two rays – AP and BQ – intersect at point C.

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° .

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

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

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

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

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

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

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., $\angle LPQ = 35^\circ$.

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

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