Exercise 10.4

Question 1:

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

Answer 1:

To construct: ΔABC where $m\angle A = 60^\circ$, $m\angle B = 30^\circ$ and AB = 5.8 cm.

Steps of construction:

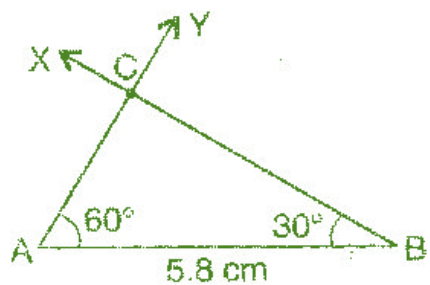
(a) Draw a line segment AB = 5.8 cm.

(b) At point A, draw an angle $\angle YAB = 60^\circ$ with the help of compass.

(c) At point B, draw $\angle XBA = 30^\circ$ with the help of compass.

(d) AY and BX intersect at the point C.

It is the required triangle ABC.



Question 2:

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

Answer 2:

Given: $m\angle PQR = 105^\circ$ and $m\angle QRP = 40^\circ$

We know that sum of angles of a triangle is 180°.

$\therefore \quad m\angle PQR + m\angle QRP + m\angle QPR = 180^\circ$

$\Rightarrow \quad 105^\circ + 40^\circ + m\angle QPR = 180^\circ$

$\Rightarrow \quad 145^\circ + m\angle QPR = 180^\circ$

$\Rightarrow \quad m\angle QPR = 180^\circ - 145^\circ$

$\Rightarrow \quad m\angle QPR = 35^\circ$

To construct: ΔPQR where $m\angle P = 35^\circ$, $m\angle Q = 105^\circ$ and PQ = 5 cm.

Steps of construction:

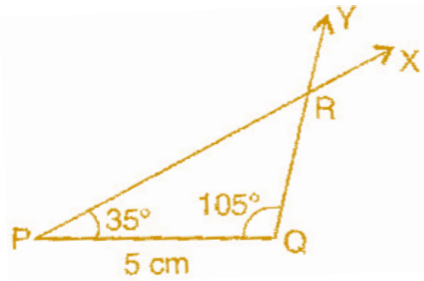
(a) Draw a line segment PQ = 5 cm.

(b) At point P, draw $\angle XPQ = 35^\circ$ with the help of protractor.

(c) At point Q, draw $\angle YQP = 105^\circ$ with the help of protractor.

(d) XP and YQ intersect at point R.

It is the required triangle PQR.



Question 3:

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

Answer 3:

Given: In ΔDEF, $m\angle$E = 110° and $m\angle$F = 80°.

Using angle sum property of triangle

$$\angle D + \angle E + \angle F = 180^\circ$$
$$\Rightarrow \angle D + 110^\circ + 80^\circ = 180^\circ$$
$$\Rightarrow \angle D + 190^\circ = 180^\circ$$
$$\Rightarrow \angle D = 180^\circ - 190^\circ = -10^\circ$$

Which is not possible.