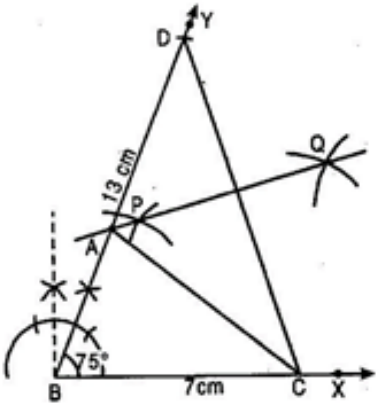
NCERT solutions for class 9 maths Constructions Ex 11.2

Q1. Construct a triangle ABC in which BC = 7 cm, $\angle B = 75°$ and AB + AC = 13 cm.

Ans. Given : Base BC = 7 cm, $\angle B = 75°$ and sum of two sides AB + AC = 13 cm.

To construct : A triangle ABC.

Steps of construction:



(a) Draw a ray BX and cut off a line segment BC = 7 cm from it.

(b) At B, construct $\angle YBX = 75°$.

(c) With B as centre and radius = 13 cm ($\because$ AB + AC = 13 cm) draw an arc to meet BY at D.

(d) Join CD.

(e) Draw perpendicular bisector PQ of CD intersecting BD at A.

(f) Join AC.

Then ABC is required triangle.

Justification:

A lies on perpendicular bisector of CD.

$\therefore$ AC = AD

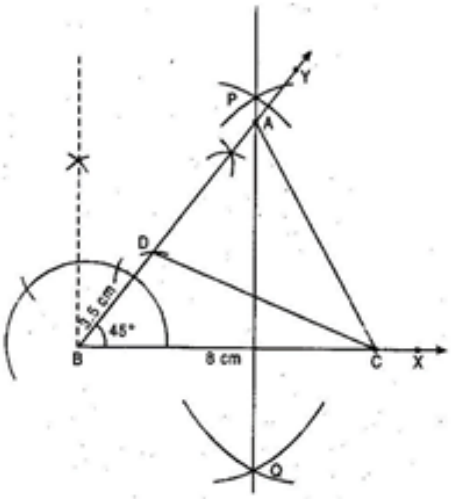
And AB = BD -AD $\Rightarrow$ AB = BD -AC

$\Rightarrow$ AB + AC = BD = 13 cm

Q2. Construct a triangle ABC in which BC = 8 cm, $\angle B = 45^\circ$ and AB -AC = 3.5 cm.

Ans. Given: Base BC = 8 cm, One Base angle $\angle B = 45^\circ$ and AB -AC = 3.5 cm

To construct: A triangle ABC.



Steps of construction:

(a) Draw a ray BX and cut off a line segment BC = 8 cm from it.

(b) Cut $\angle YBC = 45^\circ$.

(c) Cut off a line segment BD = 3.5 cm

($\because$ AB -AC = 3.5 cm) from BY.

(d) Join CD.

(e) Draw perpendicular bisector PQ of CD intersecting BY at a point A.

(f) Join AC.

Then ABC is the required triangle.

Justification:

A lies on the perpendicular bisector of CD.

$\therefore$ AD = AC

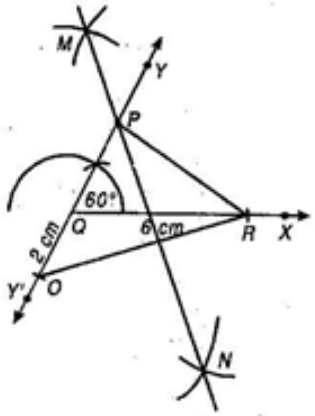
Now BD = AB -AD

$\Rightarrow$ BD = AB -AC = 3.5 cm

Q3. Construct a triangle PQR in which QR = 6 cm, $\angle Q = 60^\circ$ and PR -PQ = 2 cm.

Ans. Given: Base QR = 6 cm, one base angle $\angle Q = 60^\circ$ and PR -PQ = 2 cm.

To construct: A triangle PQR.



Steps of construction:

(a) Draw a ray QX and cut off a line segment QR

= 6 cm from it.

(b) Construct a ray QY making an angle of 60° with QR and produce YQ to form a line YQY'.

(c) Cut off a line segment QO = 2 cm ($\because$ PR -PQ = 2 cm) from QY'.

(d) Join OR.

(e) Draw perpendicular bisector MN of OR.

(f) Join PR.

Then PQR is the required triangle.

Justification:

P lies on perpendicular bisector of OR.

$\therefore$ PO = PR

$\Rightarrow$ PQ + QO = PR

$\Rightarrow$ QO = PR -PQ = 2 cm

********** END **********