



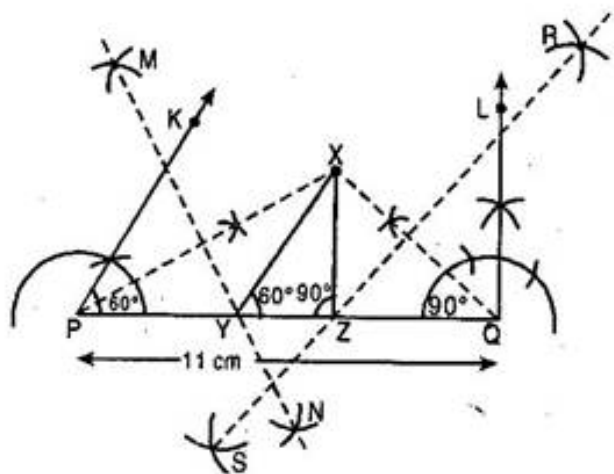
Exercise 11.2

Q4. Construct a triangle XYZ in which $\angle Y = 30^\circ$, $\angle Z = 90^\circ$ and $XY + YZ + ZX = 11$ cm.

Ans. Given: Base angles $\angle Y = 30^\circ$ and $\angle Z = 90^\circ$ and $XY + YZ + ZX = 11$ cm.

To construct: $\triangle XYZ$

Steps of construction:



(a) Draw a line segment $PQ = 11$ cm.

(b) Draw $\angle KPQ = 30^\circ$ and $\angle LQP = 90^\circ$

(c) Bisect the $\angle KPQ$ and $\angle LQP$. Let these intersect at point X.

(d) Draw perpendicular bisectors, MN of PX and RS of XQ.

(e) Let MN intersects PQ at Y and RS intersects PQ at Z.

(f) Join XY and XZ.

Then XYZ is the required triangle.

Justification:

Y lies on perpendicular bisector MN of PX.

$\therefore PY = XY$ and similarly $QZ = XZ$

This gives $XY + YZ + XZ = PY + YZ + QZ = PQ = 11 \text{ cm}$

Again $\angle YXP = \angle XPY$ [Since $XY = PY$]

$\Rightarrow \angle XYZ = \angle YXP + \angle XPY = 2\angle XPY = \angle KPQ$

$\Rightarrow \angle XYZ = 30^\circ$

Similarly, $\angle XZY = \angle LQP$

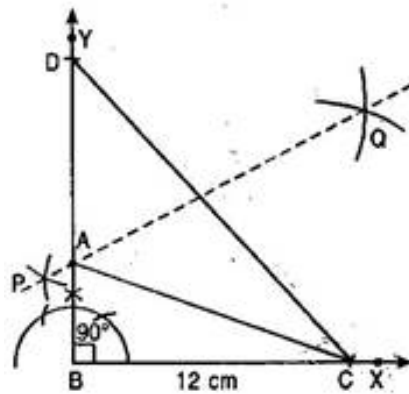
$\Rightarrow \angle XZY = 90^\circ$

Q5. Construct a right triangle whose base is 12 cm and sum of its hypotenuse and other side is 18 cm.

Ans. Given: Base $BC = 12$ cm and $AB + AC = 18$ cm.

To construct: A right angled triangle ABC right angled at B.

Steps of construction:



(a) Draw a ray BX and cut off a line segment $BC = 12$ cm from it.

(b) Draw an angle $XBY = 90^\circ$.

(c) From BY cut off a line segment $BD = 18$ cm.

(d) Join CD.

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

(f) Join AC.

Then ABC is the required right angled triangle.

Justification:

A lies on the perpendicular bisector of CD.

$$\therefore AC = AD$$

$$\text{And then } AB = BD - AD$$

$$\Rightarrow AB = BD - AC$$

$$\Rightarrow \mathbf{AB + AC = BD = 18 \text{ cm.}}$$

***** END *****