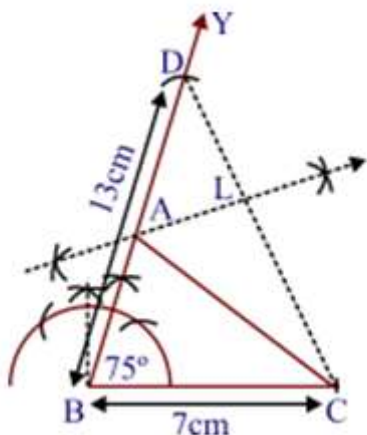


## Constructions: Exercise 11.2

**Q.1 Construct a triangle ABC in which  $BC = 7\text{ cm}$ ,  $\angle B = 75^\circ$  and  $AB + AC = 13\text{ cm}$ .**

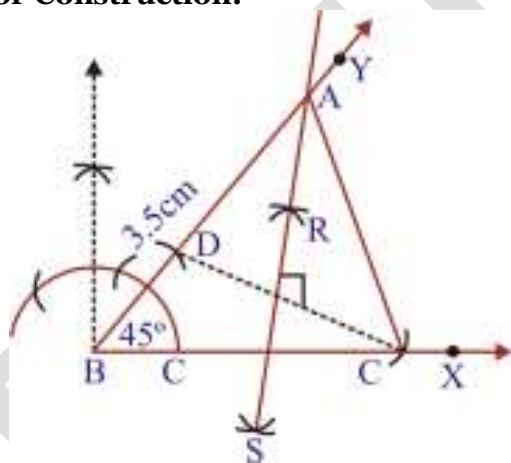
**Sol. Steps for Construction:**



- (i) Firstly, draw a line segment  $BC = 7\text{ cm}$  with help of ruler and pencil.
  - (ii) Now, construct  $\angle CBY = 75^\circ$  with help of compass.
  - (iii) On ray  $BY$ , mark an arc  $BD = 13\text{ cm}$  with help of compass.
  - (iv) Now, join  $CD$ .
  - (v) Draw the perpendicular bisector of side  $CD$  which intersects  $BD$  at  $A$ .
  - (vi) Now, join  $AC$ .
- Thus, obtained triangle  $ABC$  is the required triangle.

**Q.2 Construct a triangle ABC in which  $BC = 8\text{ cm}$ ,  $\angle B = 45^\circ$  and  $AB - AC = 3.5\text{ cm}$ .**

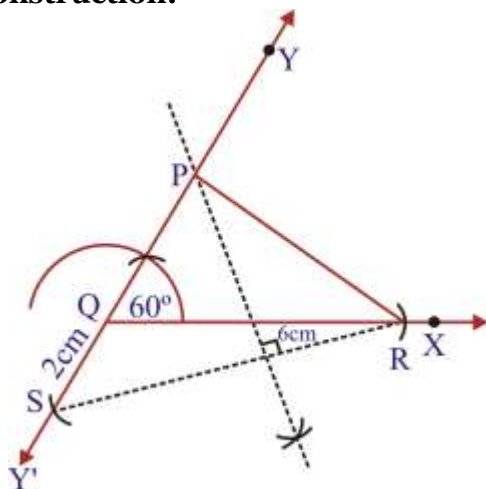
**Sol. Steps for Construction:**



- (i) Firstly, draw a ray  $BX$  with help of ruler and pencil and mark an arc from point  $B$  with help of compass on ray  $BX$  for a line segment  $BC = 8\text{ cm}$ .
  - (ii) Now, construct  $\angle YBC = 45^\circ$ .
  - (iii) Mark an arc from point  $B$  with help of compass for a line segment  $BD = 3.5\text{ cm}$  on ray  $BY$ .
  - (iv) Now, join  $CD$ .
  - (v) Draw perpendicular bisector of  $CD$  which intersects ray  $BY$  at a point  $A$ .
  - (vi) Now, join  $AC$ .
- Thus,  $\triangle ABC$  is the required triangle.

**Q.3 Construct a triangle PQR in which  $QR = 6\text{ cm}$ ,  $\angle Q = 60^\circ$  and  $PR - PQ = 2\text{ cm}$ .**

**Sol. Steps for Construction:**



(i) Firstly, draw a ray QX with help of ruler and pencil and mark an arc from point Q with help of compass for a line segment  $QR = 6\text{ cm}$ .

(ii) Now, construct a ray QY by making an angle of  $60^\circ$  with help of compass and produce YQ to form a line YQY'.

(iii) Mark an arc from point Q with help of compass for a line segment  $QS = 2\text{ cm}$  on ray QY'.

(iv) Now, join RS.

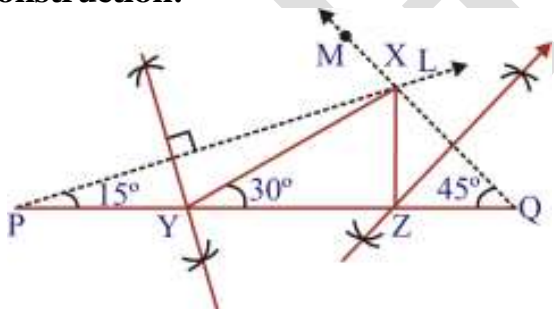
(v) Then draw perpendicular bisector of RS with help of compass which intersects QY at point P.

(vi) Now, join PR.

Thus,  $\Delta PQR$  is the required triangle.

**Q.4 Construct a triangle XYZ in which  $\angle Y = 30^\circ$ ,  $\angle Z = 90^\circ$  and  $XY + YZ + ZX = 11\text{ cm}$ .**

**Sol. Steps for Construction:**



(i) Firstly, draw a line segment  $PQ = 11\text{ cm}$  with help of ruler and pencil.

(ii) From point P, draw a ray PL such that  $\angle LPQ = \frac{1}{2} \times 30^\circ = 15^\circ$  with help of compass.

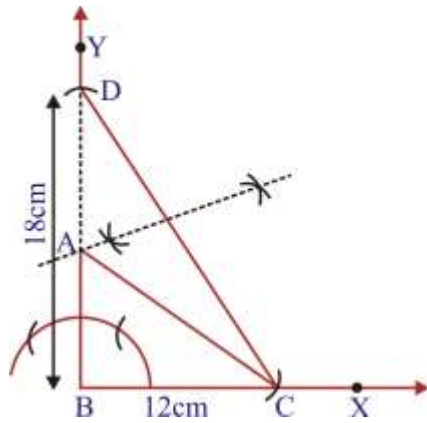
(iii) Again from point Q, draw ray QM such that  $\angle MQP = \frac{1}{2} \times 90^\circ = 45^\circ$  with help of compass which intersects ray PL at point X.

(iv) Now, draw perpendicular bisectors of XP and XQ which intersect line segment PQ on points Y and Z respectively.

Thus,  $\Delta XYZ$  is the required triangle.

**Q.5 Construct a right triangle whose base is 12 cm and sum of its hypotenuse and other side is 18 cm.**

**Sol. Steps for Construction:**



- (i) Firstly, draw a ray BX with help of ruler and pencil and mark an arc on ray BX with help of compass for a line segment  $BC = 12$  cm.
  - (ii) Now, construct  $\angle XBY = 90^\circ$  with help of compass.
  - (iii) From point B mark an arc on ray BY for a line segment  $BD = 18$  cm.
  - (iv) Now, join CD.
  - (v) Then draw the perpendicular bisector of CD which intersects BD at point A.
  - (vi) Now, join AC
- Thus,  $\triangle ABC$  is the required triangle.