

PRACTICAL GEOMETRY

CLASS-VII

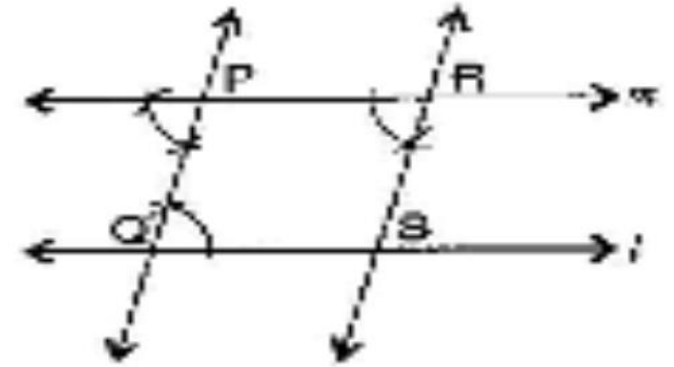
**CONSTRUCTION OF A LINE
PARALLEL TO A GIVEN LINE,
THROUGH A POINT NOT ON
THE LINE**

3. **To construct:** A pair of parallel lines intersecting other part of parallel lines.

Steps of construction:

- (a) Draw a line l and take a point P outside of l .
- (b) Take point Q on line l and join PQ .
- (c) Make equal angle at point P such that $\angle Q = \angle P$.
- (d) Extend line at P to get line m .
- (e) Similarly, take a point R on line m , at point R , draw angles such that $\angle P = \angle R$.
- (f) Extended line at R which intersects at S on line l . Draw line RS .

Thus, we get parallelogram $PQRS$.



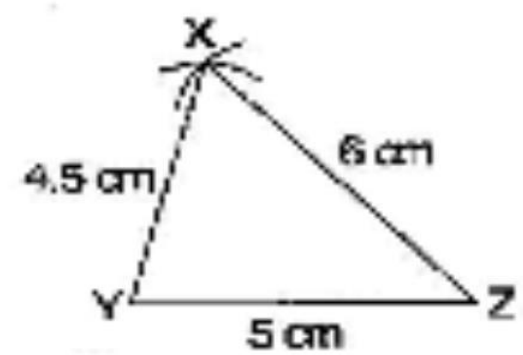
**CONSTRUCTION OF A LINE PARALLEL TO A GIVEN
LINE,
THROUGH A POINT NOT ON THE LINE**

SSS CRITERION

1. **To construct:** $\triangle XYZ$, where $XY = 4.5$ cm, $YZ = 5$ cm and $ZX = 6$ cm.

Steps of construction:

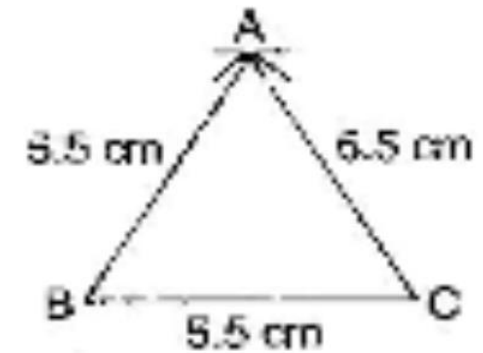
- (a) Draw a line segment $YZ = 5$ cm.
 - (b) Taking Z as centre and radius 6 cm, draw an arc.
 - (c) Similarly, taking Y as centre and radius 4.5 cm, draw another arc which intersects first arc at point X .
 - (d) Join XY and XZ .
- It is the required $\triangle XYZ$.



2. **To construct:** A $\triangle ABC$ where $AB = BC = CA = 5.5$ cm

Steps of construction:

- (a) Draw a line segment $BC = 5.5$ cm
 - (b) Taking points B and C as centers and radius 5.5 cm, draw arcs which intersect at point A .
 - (c) Join AB and AC .
- It is the required $\triangle ABC$.



CONSTRUCTING A TRIANGLE WHEN THE LENGTHS OF ITS THREE SIDES ARE KNOWN (SSS CRITERION)

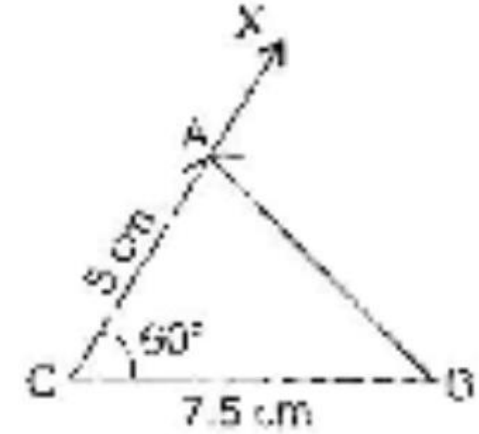
SAS CRITERION

3. **To construct:** $\triangle ABC$ where $BC = 7.5$ cm, $AC = 5$ cm and $m\angle C = 60^\circ$.

Steps of construction:

- (a) Draw a line segment $BC = 7.5$ cm.
- (b) At point C, draw an angle of 60° with the help of protractor, i.e., $\angle XCB = 60^\circ$.
- (c) Taking C as centre and radius 5 cm, draw an arc, which cuts XC at the point A.
- (d) Join AB

It is the required triangle ABC.



CONSTRUCTING A TRIANGLE WHEN THE LENGTHS OF TWO SIDES AND THE MEASURE OF THE ANGLE BETWEEN THEM ARE KNOWN. (SAS CRITERION)

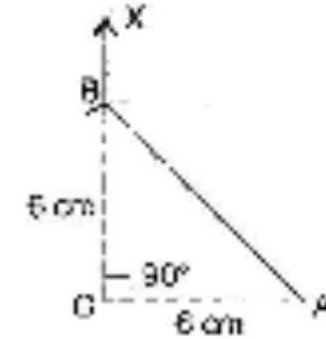
RHS CRITERION

3. **To construct:** An isosceles right angled triangle ABC where $m\angle C = 90^\circ$, $AC = BC = 6$ cm.

Steps of construction:

- (a) Draw a line segment $AC = 6$ cm.
- (b) At point C, draw $XC \perp CA$.
- (c) Taking C as centre and radius 6 cm, draw an arc.
- (d) This arc cuts CX at point B.
- (e) Join BA.

It is the required isosceles right angled triangle ABC.



CONSTRUCTING A RIGHT-ANGLED TRIANGLE WHEN THE LENGTH OF ONE LEG AND ITS HYPOTENUSE ARE GIVEN (RHS CRITERION)

ASA CRITERION

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

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

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

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

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

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

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

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

Steps of construction:

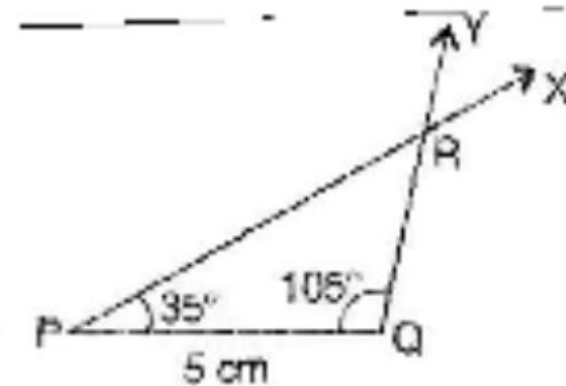
(a) Draw a line segment $PQ = 5$ cm.

(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.



CONSTRUCTING A TRIANGLE WHEN THE MEASURES OF TWO OF ITS ANGLES & THE LENGTH OF THE SIDE INCLUDED BETWEEN THEM IS GIVEN.(ASA CRITERION)