

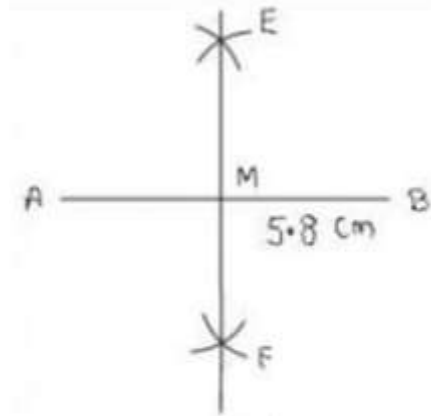
Constructions

Some Important Points

1) To Draw the Bisector of a line segment.

Example: Draw a line segment 5.8 cm long and draw its perpendicular bisector.

Construction:

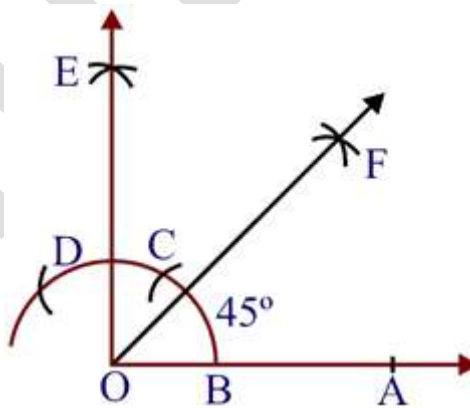


- 1: Draw a line segment $AB = 5.8$ cm by using graduated ruler.
- 2: With a centre and radius more than half of AB , draw arcs, one on each side of AB .
- 3: With B centre and some radius as in step 2, draw arcs cutting the arcs drawn in step-2 at E and F respectively.
- 4: Draw the line segment with E and F as end Points.
The Line segment EF is the required perpendicular bisector of AB .

2) To draw the bisector of a given angle.

Example: Construct an angle of 45° at the initial point of a given ray and justify the Construction.

Construction:

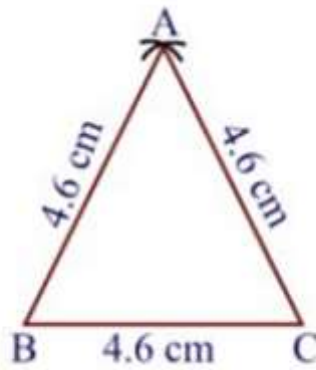


- 1: Draw a ray OA .
- 2: With O as centre and any suitable radius draw an arc cutting OA at B .
- 3: With B as centre and same radius cut the previous drawn arc at C and then with C as centre and same radius cut the arc at D .
- 4: With C as centre and radius more than half CD draw an arc.
- 5: With D as Centre and same radius draw another arc to cut the previous arc at E .
- 6: Join OE . Then $\angle AOE = 90^\circ$
- 7: Draw the bisector OF of $\angle AOE$ then $\angle AOF = 45^\circ$
By Construction $\angle AOE = 90^\circ$ and OF is the bisector of $\angle AOE$
Therefore, $\angle AOF = \frac{1}{2} \angle AOE = \frac{1}{2} \times 90^\circ = 45^\circ$

3) Construct an equilateral triangle, given its side and justify the construction.

Example: Draw an equilateral triangle of side 4.6 cm

Construction:



1: Draw $BC = 4.6$ cm

2: With B and C as centres and Radii equal to $BC = 4.6$ cm, draw two arcs on the same side of BC, intersecting each other at A.

3: Join AB and AC.

Justification : Since by construction :

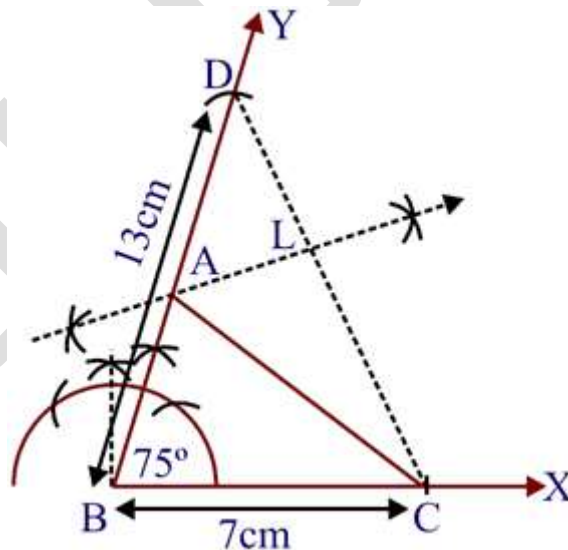
$AB = BC = CA = 4.6$ cm

Therefore $\triangle ABC$ is an equilateral triangle.

4) Construction of a triangle when its Base, Sum of the other two sides and one base angle are given.

Example: Construct a triangle ABC in which $BC = 7$ cm, $\angle B = 75^\circ$ and $AB + AC = 13$ cm.

Construction:



1: Draw a ray BX and cut off a line segment $BC = 7$ cm

2: Construct $\angle XBY = 75^\circ$

3: From BY, cut off $BD = 13$ cm.

4: Join CD.

5: Draw the perpendicular bisect of CD, intersecting BA at A.

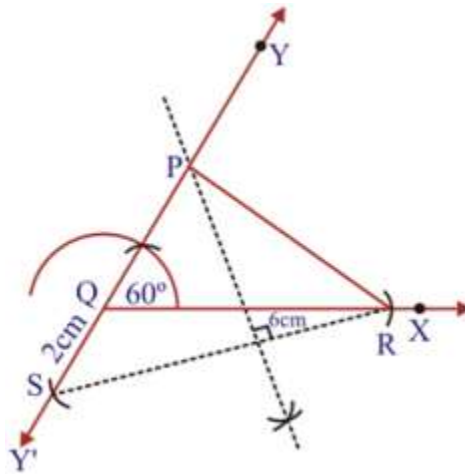
6: Join AC.

The triangle ABC thus obtained is the required triangle.

5) Construction of a triangle when its base, difference of the other two sides and one base angle are given.

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

Construction:



- 1: Draw a QX and Cut off a line segment $QR = 6\text{ cm}$ from it.
 - 2: Construct a ray QY making an angle of 60° with QR and Produce YQ to form a line YQY'
 - 3: Cut off a line segment $QS = 2\text{ cm}$ from QY'.
 - 4: Join RS.
 - 5: Draw perpendicular bisector of RS intersecting QY at a point P.
 - 6: Join PR.
- Then PQR is the required triangle.