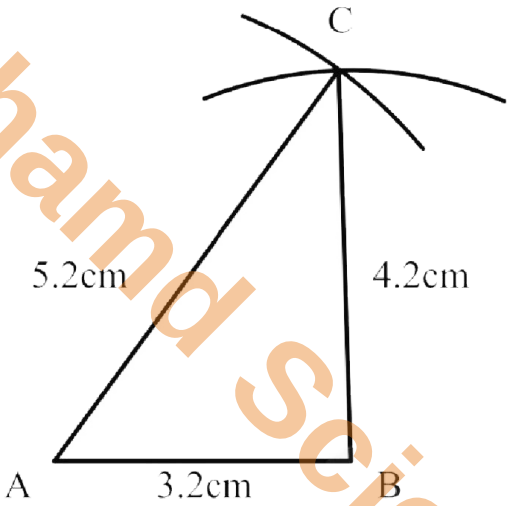
Exercise 17.1

Q.1 Construct a ΔABC in which

(i) $m\overline{AB}=3.2cm$ $m\overline{BC}=4.2cm$ $m\overline{CA}=5.2cm$



i. Draw a line segment $m\overline{AB}=3.2cm$

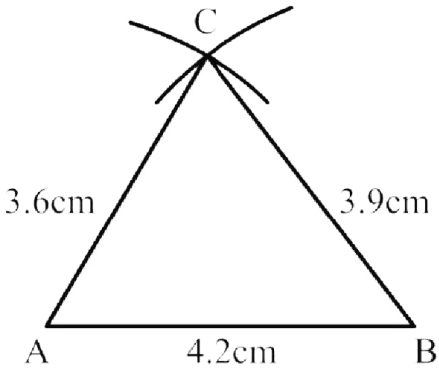
ii. Taking A as centre draw an arc of radius 5.2cm.

iii. Taking B as centre draw an arc of radius 4.2cm to cut at point C.

iv. Join C to A and C to B.

Thus ΔABC is the required triangle.

(ii) $m\overline{AB}=4.2cm$ $m\overline{BC}=3.9cm$ $m\overline{CA}=3.6cm$



i. Draw a line segment $m\overline{AB}=4.2cm$

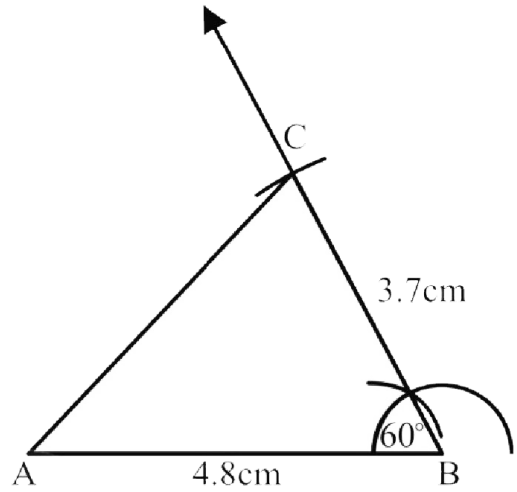
ii. Taking A as centre draw an arc of radius 3.6cm.

iii. Taking B as centre draw an arc of radius 3.9cm to cut at point C.

iv. Join C to A and C to B.

Thus ΔABC is the required triangle.

(iii) $m\overline{AB}=4.8cm$ $m\overline{BC}=3.7cm$ $m\angle B=60^\circ$



i. Draw a line segment $m\overline{AB}=4.8cm$.

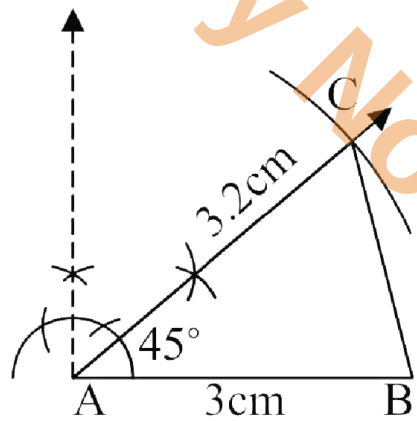
ii. Taking B as centre draw an angle of 60°.

iii. Taking B as centre draw an arc of radius 3.7cm cutting terminal side of 60° at C.

iv. Join C to A.

Thus ΔABC is the required triangle.

(iv) $m\overline{AB}=3cm$ $m\overline{AC}=3.2cm$ $m\angle A=45^\circ$



i. Draw a line segment $m\overline{AB}=3cm$.

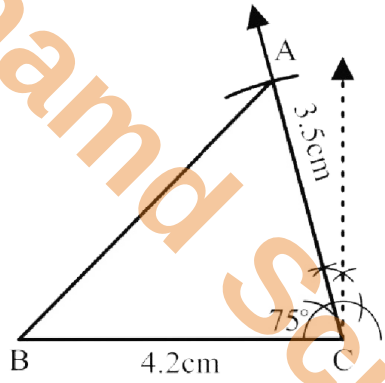
ii. Taking A as centre draw an angle of 45°.

iii. Taking A as centre draw an arc of radius 3.2cm to cut the terminal side of angle at C.

iv. Join C to B.

Thus ΔABC is the required triangle.

(v) $m\overline{BC}=4.2cm$ $m\overline{CA}=3.5cm$ $m\angle C=75^\circ$



i. Draw a line segment $m\overline{BC}=4.2cm$.

ii. Taking C as centre draw an angle of 75°.

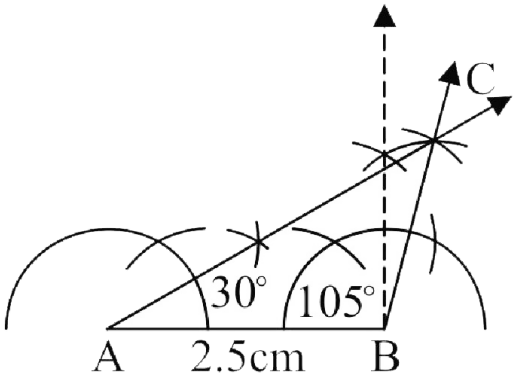
iii. Taking C as centre draw an arc of radius 3.5cm.

iv. Cutting the terminal side of angle at A.

v. Join A to B.

Thus ΔABC is the required triangle.

(vi) $m\overline{AB}=2.5cm$ $m\angle A=30^\circ$ $m\angle B=105^\circ$



i. Draw a line segment $m\overline{AB}=2.5cm$.

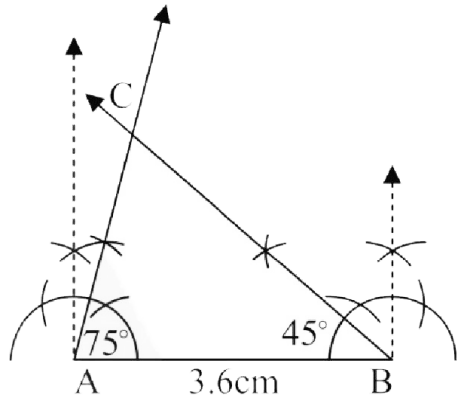
ii. Taking A as centre draw an angle of 30°.

iii. Taking B as centre draw an angle of 105°.

iv. Terminal sides of these two angles meet at C.

Thus ΔABC is the required triangle.

(vii) $m\overline{AB}=3.6cm$ $m\angle A=75^\circ$ $m\angle B=45^\circ$



i. Draw a line segment $m\overline{AB}=3.6cm$.

ii. Taking A as centre draw an angle of 75°.

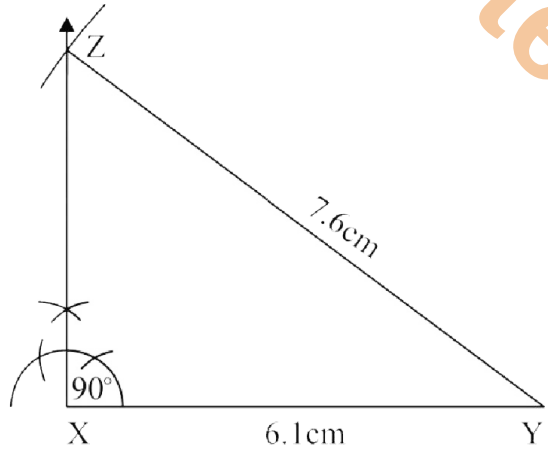
iii. Taking B as centre draw an angle of 45°.

iv. Terminal sides of these two angles meet at point C.

Thus ΔABC is the required triangle.

Q.2 Construct a ΔXYZ in which

(i) $m\overline{YZ}=7.6cm$ $m\overline{XY}=6.1cm$ $m\angle X=90^\circ$



i. Draw a line segment $m\overline{XY} = 6.1cm$.

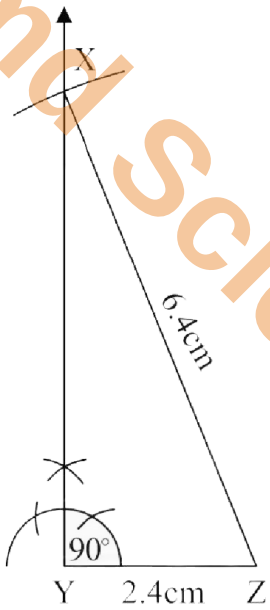
ii. Taking X as Centre draw an angle of 90°.

iii. Taking Y as Centre draw an arc of radius 7.6cm to cut terminal sides of angle at Z.

iv. Join Y to Z.

Thus ΔXYZ is the required triangle.

(ii) $m\overline{ZX} = 6.4cm \;\; m\overline{YZ} = 2.4cm \;\; m\angle Y = 90^\circ$



i. Draw a line segment $m\overline{YZ} = 2.4cm$.

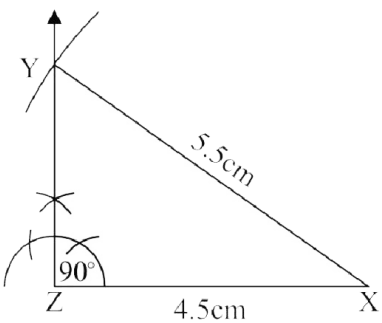
ii. Taking Y as centre draw an angle of 90°.

iii. Taking Z as centre draw an arc of radius 6.4cm. Which cuts the terminal side of angle at X.

iv. Join X and Z.

Thus ΔXYZ is the required triangle.

(iii) $m\overline{XY} = 5.5cm \;\; m\overline{ZX} = 4.5cm \;\; m\angle Z = 90^\circ$



i. Draw a line segment 4.5cm.

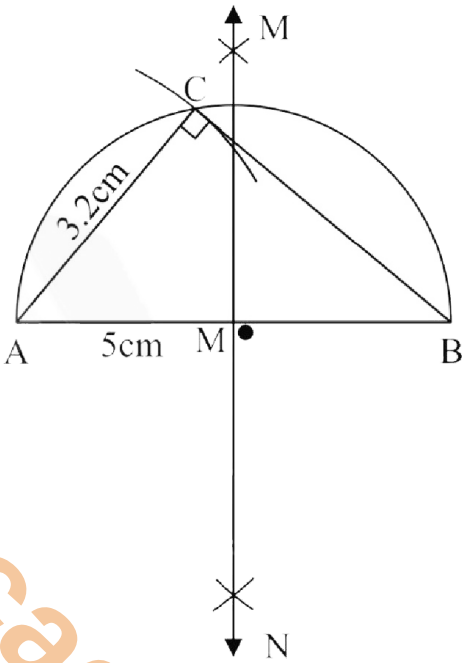
ii. Taking Z as centre draw an angle of 90°.

iii. Taking X as centre draw an arc of radius 5.5cm. Which cut the terminal side angle at Y.

iv. Join Y to X.

Thus ΔXYZ is the required triangle.

Q.3 Construct a right angled Δ measure of whose hypotenuse is 5cm and one side is 3.2 cm



Construction:

i. Draw a line segment $m\overline{AB}$=5cm.

ii. Bisect $\overline{AB}$ at M.

iii. Taking M as centre take a radius $\overline{AM}$ or $\overline{BM}$ and draw a semicircle.

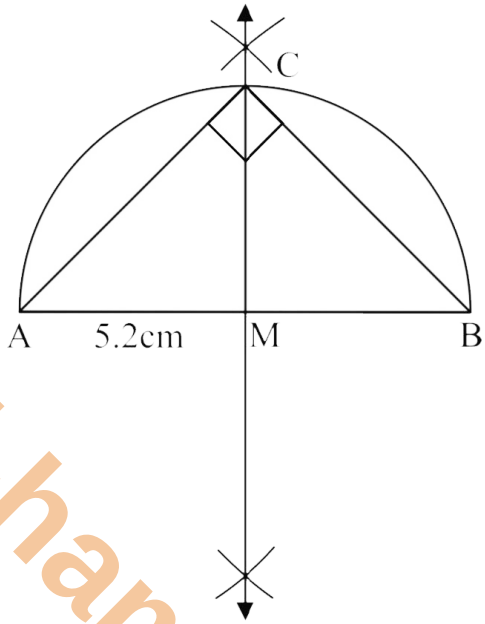
iv. Taking A as centre draw an arc of radius 3.2cm cutting semicircle at C.

v. Join C to A and C to B.

Thus ΔABC is the required right angled triangle.

Q.4 Construct right angled isosceles triangle whose hypotenuse is

(i) 5.2cm long



Construction:

i. Draw a line segment $m\overline{AB} = 5.2cm$.

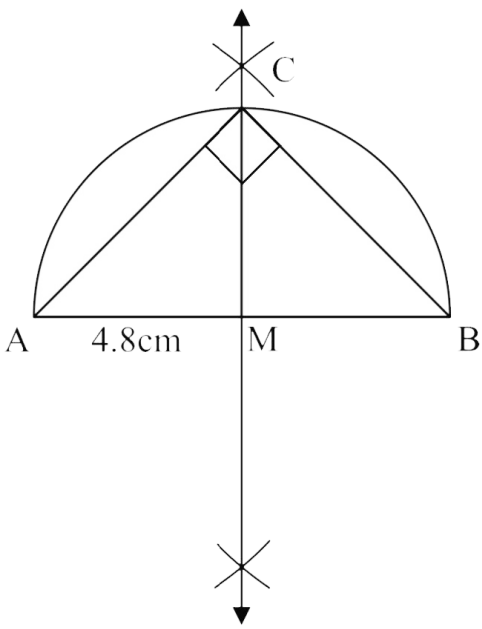
ii. Bisect $\overline{AB}$ at point M.

iii. With M as centre draw a semi circle of radius $\overline{AM}$ or $\overline{BM}$ which intersects the right bisector at C.

iv. Join A to C and B to C.

ΔABC is the required right angled isosceles triangle with $m\angle C = 90°$.

(ii) 4.8cm long



i. Take a line segment $m\overline{AB} = 4.8cm$.

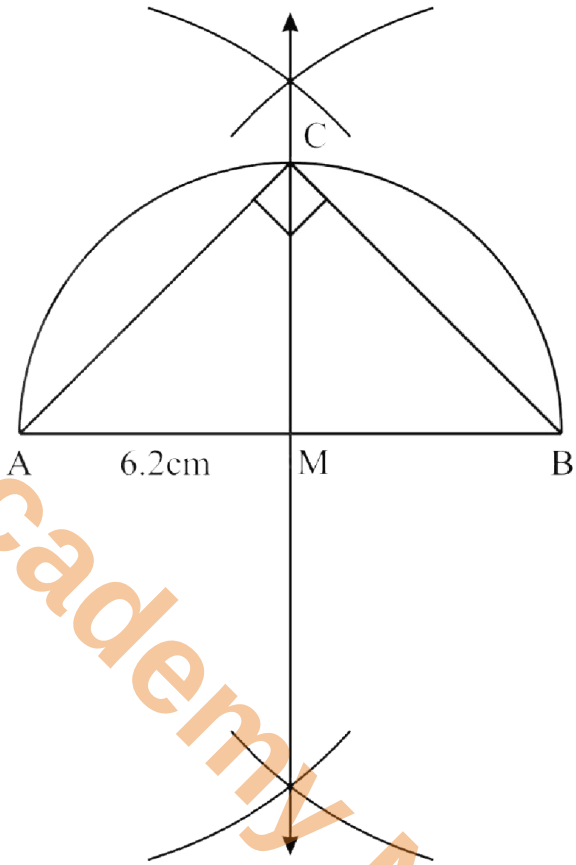
ii. Bisect $\overline{AB}$ at point M.

iii. Taking M as centre draw a semi circle of radius $\overline{AM}$ or $\overline{MB}$ which intersects the right bisector at C.

iv. Join A to C and B to C.

Thus ABC is the right angled isosceles triangle with $\angle C = 90°$.

(iii) 6.2 cm



i. Take a line segment $m\overline{AB} = 6.2cm$.

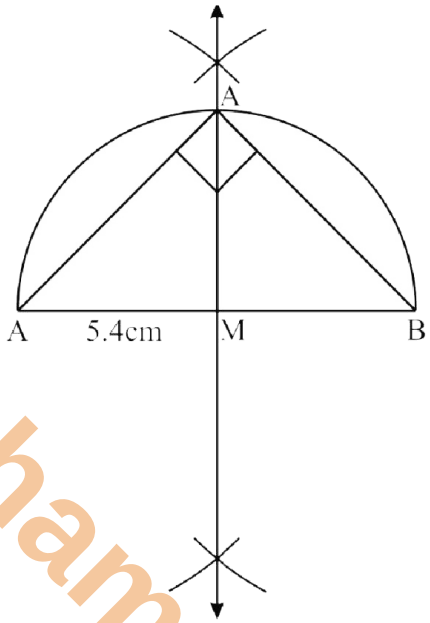
ii. Bisect $\overline{AB}$ at point M.

iii. Taking M as a centre draw a semi circle of radius $\overline{AM}$ or $\overline{BM}$ which intersects the right bisector at C.

iv. Join A to C and B to C.

Thus ΔABC is the right angled isosceles triangle with $\angle C = 90°$.

(iv) **5.4 cm**



Construction:

i. Take a line segment $m\overline{AB} = 5.4cm$.

ii. Bisect $\overline{AB}$ at point M.

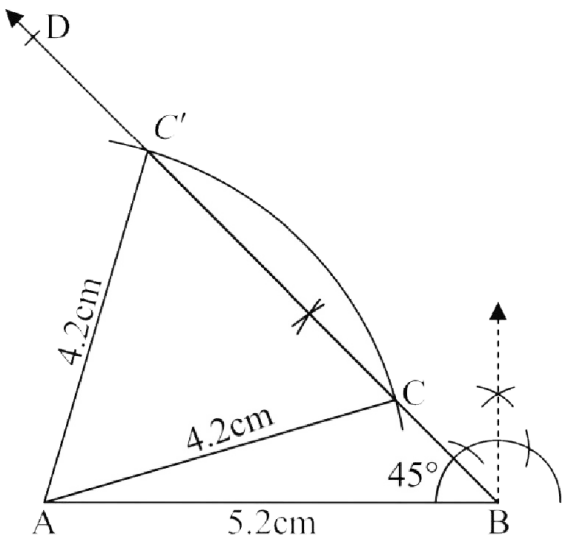
iii. Taking M as a centre draw a semi circle of radius $\overline{AM}$ or $\overline{BM}$ which intersects the right bisector at C.

iv. Join A to C and B to C.

Thus ΔABC is the right angled isosceles triangle with $\angle C = 90^\circ$.

Q.5 **(Ambiguous case) Construct a Δ ABC in which**

(i) $m\overline{AC} = 4.2cm \;\; m\overline{AB} = 5.2cm \;\; m\angle B = 45^\circ$



Construction:

i. Draw a line segment $m\overline{AB} = 5.2cm$.

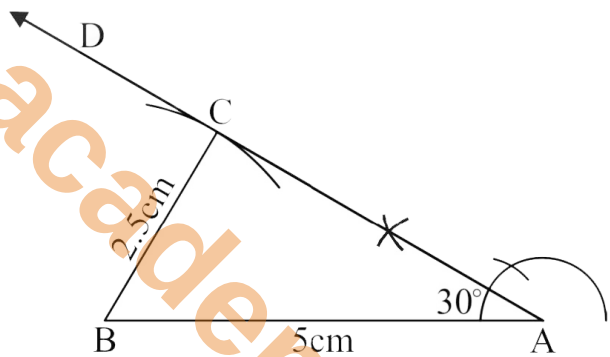
ii. At the end point B of $\overline{BA}$ make $\angle B = 45^\circ$.

iii. With centre at A and radius 4.2cm draw an arc which cuts $\overrightarrow{BD}$ in two distinct points C and C`.

iv. Draw $\overline{AC}$ and $\overline{AC}'$.

$\therefore$ ΔABC and ΔABC` are required triangles.

(ii) $m\overline{BC} = 2.5cm \;\; m\overline{AB} = 5cm \;\;\; m\angle A = 30^\circ$



Construction:

i. Take a line segment $m\overline{AB} = 5cm$.

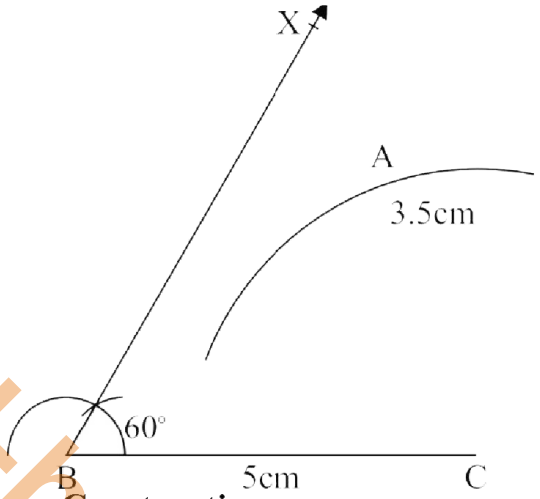
ii. At the end point A of $\overline{AB}$ make $m\angle A = 30^\circ$.

iii. Taking B as centre draw an arc of radius 2.5cm which touch as $\overrightarrow{AD}$ at point C.

iv. Join B to C.

$\therefore$ ΔABC is required triangle.

(iii) $m\overline{BC} = 5cm \;\;\; m\overline{AC} = 3.5cm \;\; m\angle B = 60^\circ$



Construction:

i. Take a line segment $m\overline{BC} = 5cm$.

ii. At the end point B of $\overline{BC}$ make an angle of $\angle B = 60^\circ$.

iii. Taking C as centre draw an arc of radius 3.5cm which does not touches or intersects $\overrightarrow{BX}$ at any point.

$\therefore$ ΔABC is not possible.