

Justification of Construction:

We can justify the construction by showing $\triangle ABC$ as an equilateral triangle i.e., $AB = BC = AC = 5$ cm and $\angle A = \angle B = \angle C = 60^\circ$.

In $\triangle ABC$, we have $AC = AB = 5$ cm and $\angle A = 60^\circ$.

Since $AC = AB$,

$\angle B = \angle C$ (Angles opposite to equal sides of a triangle)

In $\triangle ABC$,

$\angle A + \angle B + \angle C = 180^\circ$ (Angle sum property of a triangle)

$\angle 60^\circ + \angle C + \angle C = 180^\circ$

$\angle 60^\circ + 2\angle C = 180^\circ$

$\angle 2\angle C = 180^\circ - 60^\circ = 120^\circ$

$\angle \angle C = 60^\circ$

$\angle B = \angle C = 60^\circ$

We have, $\angle A = \angle B = \angle C = 60^\circ$... (1)

$\angle A = \angle B$ and $\angle A = \angle C$

$\angle BC = AC$ and $BC = AB$ (Sides opposite to equal angles of a triangle)

$AB = BC = AC = 5$ cm ... (2)

From equations (1) and (2), $\triangle ABC$ is an equilateral triangle.

Exercise 11.2

Question 1:

$\triangle ABC$ is the required triangle.