

Ch-4

Exercise 4.10

Let the length of one side of Δ be x (cm)
 Other side length = $x+5$
 Hypotenuse = 25 cm

ATQ,

$$(x)^2 + (x+5)^2 = (25)^2$$

$$x^2 + x^2 + 10x + 25 = 625$$

$$2x^2 + 10x + 25 - 625 = 0$$

$$2x^2 + 10x - 600 = 0$$

$$x^2 + 5x - 300 = 0$$

$$x^2 + 20x - 15x - 300 = 0$$

$$x(x+20) - 15(x+20) = 0$$

$$(x+20)(x-15) = 0$$

$$x+20 = 0$$

$$\boxed{x = -20}$$

(Neglected)

$$x - 15 = 0$$

$$\boxed{x = 15}$$

$$\therefore 1^{\text{st}} \text{ side} = \boxed{15 \text{ cm}}$$

$$2^{\text{nd}} \text{ side} = \boxed{20 \text{ cm}}$$

NCERT Ques

Let the smaller leg of Δ be x & the larger leg be y
 Hypotenuse = $3\sqrt{10}$ cm

ATQ,

$$x^2 + y^2 = (3\sqrt{10})^2$$

$$x^2 + y^2 = 90 \quad \text{--- ①}$$

ATQ,

$$(3x)^2 + (2y)^2 = (9\sqrt{5})^2$$

$$9x^2 + 4y^2 = 405 \quad \text{--- ②}$$

Multiply ① by 9.

$$9x^2 + 9y^2 = 810 \quad \text{--- ③}$$

Subtract ② from ③,

$$9x^2 + 9y^2 = 810$$

$$9x^2 + 4y^2 = 405$$

$$\begin{array}{r} (-) \quad (-) \quad (-) \end{array}$$

$$5y^2 = 405$$

$$y^2 = \frac{405}{5} = 81$$

$$y = \sqrt{81}$$

$$y = 9$$

Putting value of y in ①

$$x^2 + y^2 = 90$$

$$x^2 + (9)^2 = 90$$

$$x^2 = 90 - 81$$

$$x = \sqrt{9}$$

$$x = 3$$

$\therefore$ Length of smaller leg = 3 cm
Length of longer leg = 9 cm