

Ch-4 Exercise 4.11

Let the breadth of the hall be x .

$$\text{Length} = x + 5$$

$$\text{Area} = 84 \text{ m}^2$$

ATQ,

$$x(x+5) = 84$$

$$x^2 + 5x = 84$$

$$x^2 + 5x - 84 = 0$$

$$x^2 + 12x - 7x - 84 = 0$$

$$x(x+12) - 7(x+12) = 0$$

$$(x+12)(x-7) = 0$$

$$x+12 = 0$$

$$x = -12$$

(Neglected)

$$x - 7 = 0$$

$$x = 7$$

$$\therefore \text{Breadth} = 7 \text{ m}$$

$$\text{Length} = 7 + 5 = 12 \text{ m}$$

Side of first square = x

Side of second square = $x + 4$

ATQ,

$$x^2 + (x+4)^2 = 656$$

$$x^2 + x^2 + 8x + 16 = 656$$

$$2x^2 + 8x + 16 - 656 = 0$$

$$2x^2 + 8x - 640 = 0$$

$$x^2 + 4x - 320 = 0$$

$$x^2 + 20x - 16x - 320 = 0$$

$$x(x+20) - 16(x+20) = 0$$

$$(x+20)(x-16) = 0$$

$$x+20 = 0$$

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

(Neglected)

$$x-16 = 0$$

$$\boxed{x = 16}$$

∴ Side of first square = $\boxed{16 \text{ cm}}$

Side of second square = $16 + 4 = \boxed{20 \text{ cm}}$

Q. 4

Let the base of right angled Δ be x

Altitude = $x+7$

Area = 165 m^2

ATQ,

$$\frac{1}{2} \times x \times (x+7) = 165$$

$$x^2 + 7x = 165 \times 2$$

$$x^2 + 7x = 330$$

$$x^2 + 7x - 330 = 0$$

$$x^2 + 22x - 15x - 330 = 0$$

$$x(x+22) - 15(x+22) = 0$$

$$(x+22)(x-15) = 0$$

$$x+22 = 0$$

$$\boxed{x = -22}$$

(Neglected)

$$x-15 = 0$$

$$\boxed{x = 15}$$

∴ Base = $\boxed{15 \text{ m}}$

Altitude = $15 + 7 = \boxed{22 \text{ m}}$

Let the side of the first & second square be x & y respectively.

ATQ, CASE I

$$4x - 4y = 16$$

$$x - y = 4$$

$$x = 4 + y \quad \text{--- (1)}$$

CASE II

$$x^2 + y^2 = 400$$

Putting value of x

$$(4 + y)^2 + y^2 = 400$$

$$16 + y^2 + 8y + y^2 = 400$$

$$2y^2 + 8y + 16 - 400 = 0$$

$$2y^2 + 8y - 384 = 0$$

$$y^2 + 4y - 192 = 0$$

$$y^2 + 16y - 12y - 192 = 0$$

$$y(y + 16) - 12(y + 16) = 0$$

$$(y + 16)(y - 12) = 0$$

$$y + 16 = 0$$

$$y = -16$$

(Neglected)

$$y - 12 = 0$$

$$y = 12$$

Putting value of y in (1)

$$x = 4 + y$$

$$x = 4 + 12$$

$$x = 16$$

$$\therefore \text{Side of first square} = 16 \text{ cm}$$

$$\text{Side of second square} = 12 \text{ cm}$$

Q.9

Let the breadth be x .

$$\text{Length} = 2x + 1$$

$$\text{Area} = 528 \text{ m}^2$$

ATQ,

$$x(2x+1) = 528$$

$$2x^2 + x - 528 = 0$$

$$2x^2 + 33x - 32x - 528 = 0$$

$$\cancel{2x(2x+33)} - 32$$

$$x(2x+33) - 16(2x+33) = 0$$

$$(2x+33)(x-16) = 0$$

$$2x + 33 = 0$$

$$\boxed{x = \frac{-33}{2}}$$

(Neglected)

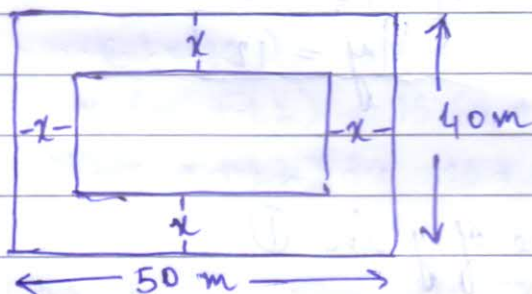
$$x - 16 = 0$$

$$\boxed{x = 16}$$

$$\therefore \text{Breadth} = \boxed{16 \text{ m}}$$

$$\text{Length} = 2(16) + 1 = \boxed{33 \text{ m}}$$

Q.10



Let the distance between the boundaries of lawn & pond be x . pond be x .

$$\text{Length of lawn} = 50 \text{ m}$$

$$\text{Breadth of lawn} = 40 \text{ m}$$

$$\text{Length of pond} = 50 - (x + x) \\ = 50 - 2x$$

$$\text{Breadth of pond} = 40 - (x + x) \\ = 40 - 2x$$

$$\text{Area of grass around pond} = 1184 \text{ m}^2$$

ATQ,

$$\text{Area of pond} = \text{Area of lawn} - \text{Area of grass around pond.}$$

$$(50 - 2x)(40 - 2x) = (50)(40) - 1184$$

$$2000 - 100x - 80x + 4x^2 = 2000 - 1184$$

$$2000 - 180x + 4x^2 = 2000 - 1184$$

$$4x^2 - 180x + 1184 = 0$$

$$x^2 - 45x + 296 = 0$$

$$x^2 - 8x - 37x + 296 = 0$$

$$x(x - 8) - 37(x - 8) = 0$$

$$(x - 8)(x - 37) = 0$$

$$\cancel{x - 37}$$

$$x - 8 = 0$$

$$\boxed{x = 8}$$

$$x - 37 = 0$$

$$\boxed{x = 37}$$

(Neglected)

$$\therefore \text{Length of pond} = 50 - 2(8) \\ = 50 - 16$$

$$= \boxed{34 \text{ m}}$$

$$\text{Breadth of pond} = 40 - 2(8) \\ = 40 - 16$$

$$= \boxed{24 \text{ m}}$$