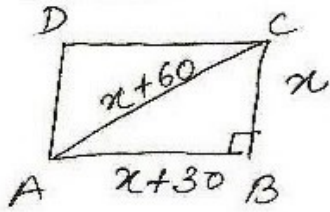


⑥



let shorter side = x m
 diagonal = $(x+60)$ m
 longer side = $(x+30)$ m

In rt ΔABC

$$AC^2 = AB^2 + BC^2 \quad (\text{Pythagoras theorem})$$

$$(x+60)^2 = (x+30)^2 + x^2$$

$$\Rightarrow x^2 + 3600 + 120x = x^2 + 900 + 60x + x^2$$

$$\Rightarrow x^2 - 60x - 2700 = 0$$

$$\Rightarrow x^2 - 90x + 30x - 2700 = 0$$

$$\Rightarrow x(x-90) + 30(x-90) = 0$$

$$\Rightarrow (x-90)(x+30) = 0$$

$$\Rightarrow x-90=0, \quad x+30=0$$

$$\Rightarrow x=90, \quad x=-30 \text{ rejected}$$

Shorter Side = 90 m, longer Side = 120 m

⑦ let smaller no = x , larger no. = y
 acc to condition I

$$x^2 = 8y \dots \text{①}$$

acc to condition II

$$y^2 - x^2 = 180$$

$$y^2 - 8y - 180 = 0$$

(using I)

$$\Rightarrow y^2 - 18y + 10y - 180 = 0$$

$$\Rightarrow y(y-18) + 10(y-18) = 0$$

$$\Rightarrow (y-18)(y+10) = 0$$

$$\Rightarrow y-18=0, \quad y+10=0$$

$$\Rightarrow y=18, \quad y=-10$$

if $y=18$

$$x^2 = 8 \times 18 = 144$$

$$\Rightarrow x = \pm 12$$

if $y=-10$

$$x^2 = 8 \times -10 = -80$$

$$\Rightarrow x^2 = -80$$

rejected