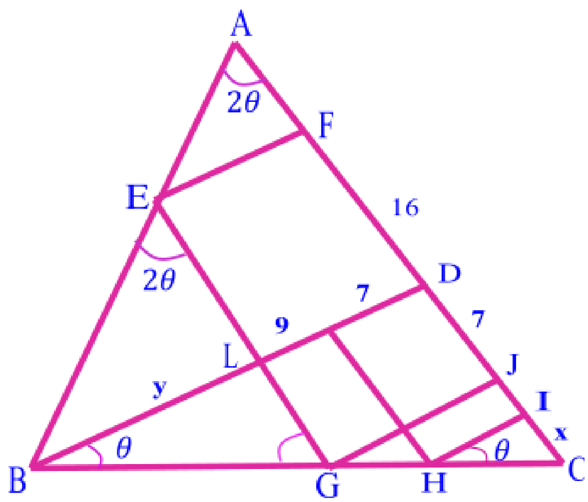
Solution:

In $\Delta\ ABC$, AB = AC (given isosceles Δle)

EFDL, KDIH are square with area 256, 49

Let BL = y, IC = x, FD = 16, DI = 7

Let $\angle LBG = \theta = \angle IHC$ ($\because \Delta\ BKH \sim \Delta\ HIC$)



In ΔHIC tan $\theta = \frac{x}{7}$ -------------------(1)

In ΔBKH tan $\theta = \frac{7}{y+9}$ -----------------(2)

From (1) & (2) $\frac{x}{7} = \frac{7}{y+9}$

$$y+9 = \frac{49}{x}$$

$$y = \frac{49-9x}{x} \quad \text{-----------(A)}$$

In $\Delta BDC\ as\ \angle B = \theta\ \angle C = 90 - \theta$ ----------------- (3)

And $\Delta\ ABC\ \angle C = \frac{180-A}{2}$ --------------------(4) (as isosceles triangle)

From (3) & (4) $90 - \theta = 90 - \frac{A}{2}$

$\therefore A = 2\theta$

In ΔHIC tan $\theta = \frac{x}{7}$ ---------------------- (5)

InΔBLE tan$2\theta = \frac{y}{16}$ ------------------ (6)

W.K.T. tan$2\theta = \frac{2Tan\theta}{1-Tan^2\theta}$

$$= \frac{2\frac{x}{7}}{1-\frac{x}{49}^2} = \frac{2x\times 49}{7(49-x^2)} = \frac{14x}{49-x^2} \quad \text{-------------- (7)}$$

From (6) & (7)

$\frac{y}{16} = \frac{14x}{49-x^2}$

By A $\frac{49-9x}{16x} = \frac{14x}{49-x^2}$

$(49-9x)(49-x^2) = 14x \times 16x$

2401 - 441x **+49**x^2**+9**x^3 **= 224**x^2

$9x^3 - 273x^2 - 441x + 2401 = 0$

Let f(x) = 9x^3**- 273**x^2**- 441** x**+2401**

By trail method when = $\frac{7}{3}$**, f(x) = 0**

$\frac{7}{3}$	9	-273	-441	2401
	0	21	-588	2401
	9	-252	-1029	0

$\therefore$ **9**x^2**- 252** x**-1029 = 0**

Solving for x $x = \frac{252\pm\sqrt{100548}}{18} = \frac{21}{9}[6 \pm \sqrt{57}]$

The roots are $\frac{7}{3}, \frac{7}{3}\ [6 \pm \sqrt{57}]$

When $x = \frac{7}{3}$ **sub in A**

$x = \frac{49-9\times\frac{7}{3}}{\frac{7}{3}} = \frac{(49-21)^3}{7} = \frac{28}{7} \times 3 = 12$

$x = \frac{7}{3}\ ,\ y = 12$

Required Area = $\frac{1}{2} \times 16 \times 12 + \frac{1}{2} \times 7 \times 21$

= 96 + 73.5 = 169.5 sq.units
