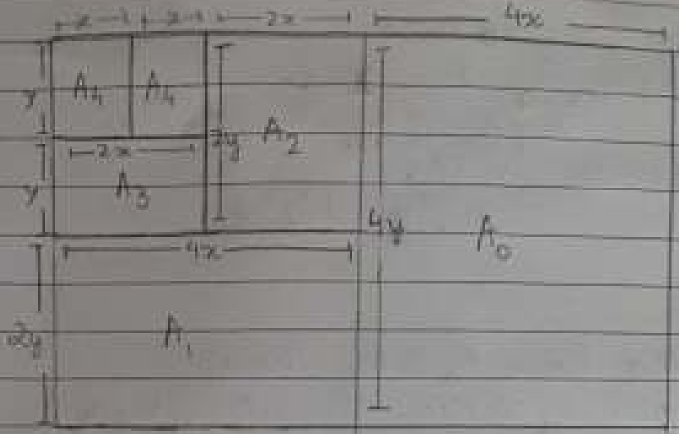

Firstly All sizes are similar

$\therefore \frac{x}{y} = \frac{y}{2x} = \frac{2x}{2y} = \frac{2y}{4x}$ so on

$\therefore 2x^2 = y^2$

$y = \sqrt{2}\, x$

ratio of smaller side to larger side

$= \frac{x}{y} = \frac{y}{2x} = \frac{x}{\sqrt{2}x} = \frac{1}{\sqrt{2}} = 1 : \sqrt{2}$

Now for A_m, shorter side

$A_4 : x = \sqrt{2}^0 x = (\sqrt{2})^{4-4} x$

$A_3 : y = \sqrt{2}x = \sqrt{2}^1 x = (\sqrt{2})^{4-3} x$

$A_2 : 2x = \sqrt{2}^2 x = (\sqrt{2})^{4-2} x$

$A_1 : 2y = 2\sqrt{2}x = \sqrt{2}^3 x = (\sqrt{2})^{4-3} x$

$A_m : \sqrt{2}^{4-m} . x$

the longer side for A_m would be $\sqrt{2} . \sqrt{2}^{4-m} . x$

$= \sqrt{2}^{5-m} . x$

$\therefore$ for A(-1) we have length (longer) $= \sqrt{2}^{5-(-1)} . x = \sqrt{2}^6 . x = 2^{6/2} . x$

$2^3 . x = 8 . x \therefore$ breadth $= \frac{8x}{\sqrt{2}}$

$= 4\sqrt{2}\, x$

similarly for $A_{1/2}$

we have

length $= (2)^{(5-1/2)\frac{1}{2}} . x$

$= \sqrt[4]{2}^9 . x = 2^{2+1/4} . x = 4\sqrt[4]{2}\, x$

$(4-1/2)$

& breadth $= \sqrt{(2)} . x$

$= 2^{7/4} . x = 2\sqrt[4]{2^3} . x$

Now

Scaling from A_3 to A_4 (linear)

= ratio of shorter sides = ratio of longer

$= \frac{A_4 \text{ (short)}}{A_3 \text{ (short)}} \times 100\%$

$= \frac{(\sqrt{2})^{4-4} . x . 100\%}{(\sqrt{2})^{4-3} . x} = \frac{1}{\sqrt{2}} \times 100\%$

$= \frac{100}{2}(\sqrt{2})\%$

$= 50(1.414)\%$

$= 70.7\%$

now for getting the value of x

we have been given

area $A_0 = 1 m^2$

length × breadth $= (100cm)^2$

$[\sqrt{2}^{4-0} . x][\sqrt{2}^{5-0} . x] = 10000$

$\sqrt{2}^9 . x^2 = 10000$

$2^{4+1/2} . x^2 = 2^4 . 5^4$

$\sqrt{2}x^2 = 5^4$

$\sqrt[4]{2}x = 5^2$

$x = \frac{25}{\sqrt[4]{2}} = 12.5\sqrt[4]{2}$

now plugging the value of x

we can find dimensions of any A