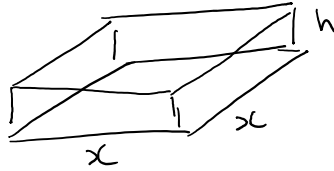


①



Maximize  $V = x^2 h$

Given  $x^2 + 4xh = 1200$

Solve for  $h$ :  $4xh = 1200 - x^2$   
 $h = \frac{1200 - x^2}{4x}$

$h = \frac{1200 - x^2}{4x} \rightarrow V$  :  $V = \frac{x^2 (1200 - x^2)}{4x}$

$$V = \frac{1200x - x^3}{4}$$

$$V' = \frac{1200 - 3x^2}{4}$$

Set  $V' = 0$  :  $\frac{1200 - 3x^2}{4} = 0$

$$1200 - 3x^2 = 0$$

$$1200 = 3x^2$$

$$x^2 = 400$$

$$x = \pm 20$$

$$x = 20$$

$$x = 20 \rightarrow h: \quad h = \frac{1200 - 20^2}{80}$$
$$= 10$$

The dimensions are  $x = 20\text{cm}$  and  $h = 10\text{cm}$