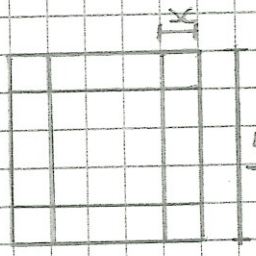

$x < 0, \quad y < 2x$

Let x be the side length of the squares being cut out.

Let y be the side length of the whole sheet of paper.

Volume, $V = (y-2x)^2 x = 4x^3 - 4yx^2 + y^2x$

$\frac{dV}{dx} = 12x^2 - 8yx + y^2 = (6x-y)(2x-y)$

At turning points $\frac{dV}{dx} = 0$, so $x = \frac{y}{6}, \; x = \frac{y}{2}$

At maximum $\frac{d^2V}{dx^2} < 0$

$\frac{d^2V}{dx^2} = 24x - 8y$

$24\left(\frac{y}{6}\right) - 8y = -4y$ - this is the maximum

$24\left(\frac{y}{2}\right) - 8y = 4y$

At maximum V, $x = \frac{y}{6}$, $V = \left(y - 2\left(\frac{y}{6}\right)\right)^2 \times \frac{y}{6}$

$= \frac{2y^3}{27}$

Here $y = 20\text{cm}$

$x = \frac{y}{6} = \frac{20}{3}\text{ cm}$

$V = \frac{2(20)^3}{27} = \frac{16000}{27}\text{ cm}^3$