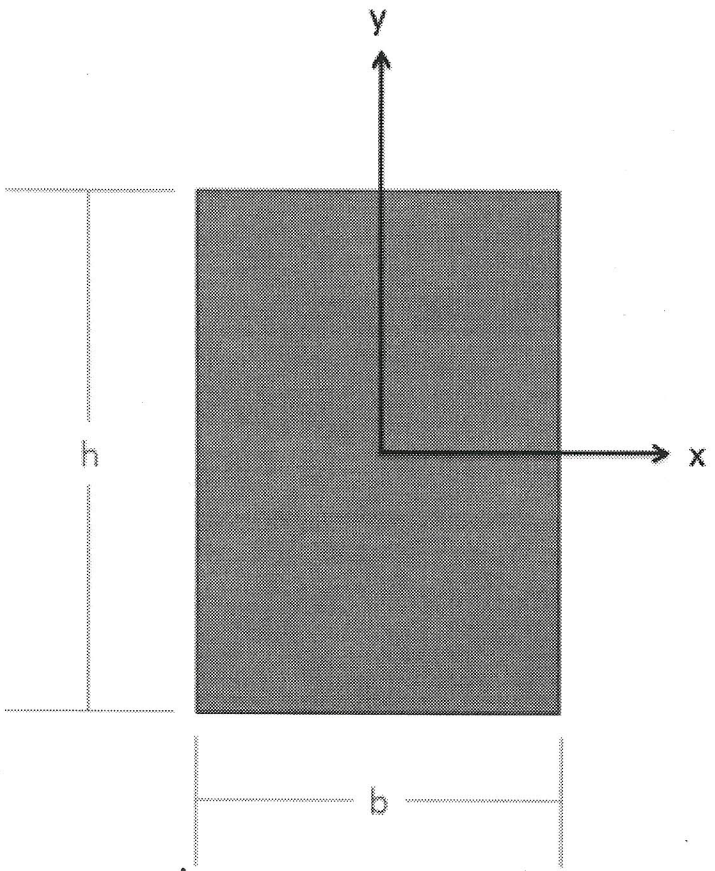
Find the rectangular moments of inertia for this shape about both the X and Y axes though the centroid. Leave the answer in terms of the generic width (b) and height (h) of the rectangle.



$$I_{xx} = \int_{-\frac{h}{2}}^{\frac{h}{2}} (dA)(y^2)$$

$$I_{xx} = \int_{-\frac{h}{2}}^{\frac{h}{2}} (b)(dy)(y^2) = \int_{-\frac{h}{2}}^{\frac{h}{2}} by^2\, dy$$

$$I_{xx} = \left| \begin{matrix} \frac{h}{2} \\ -\frac{h}{2} \end{matrix} \right. \frac{1}{3} b y^3$$

$$I_{xx} = \frac{1}{24} bh^3 + \frac{1}{24} bh^3$$

$$\boxed{I_{xx} = \frac{1}{12} bh^3}$$

$$I_{yy} = \int_{-\frac{b}{2}}^{\frac{b}{2}} (dA)(x^2)\, dx$$

$$I_{yy} = \int_{-\frac{b}{2}}^{\frac{b}{2}} (h)(x^2)\, dx = \left|_{-\frac{b}{2}}^{\frac{b}{2}} (h)\left(\frac{1}{3}\right)(x^3)\right.$$

$$I_{yy} = \frac{1}{3} h \left(\frac{b}{2}\right)^3 - \frac{1}{3} h \left(\frac{-b}{2}\right)^3$$

$$I_{yy} = \frac{1}{24} hb^3 + \frac{1}{24} hb^3$$

$$\boxed{I_{yy} = \frac{1}{12} hb^3}$$