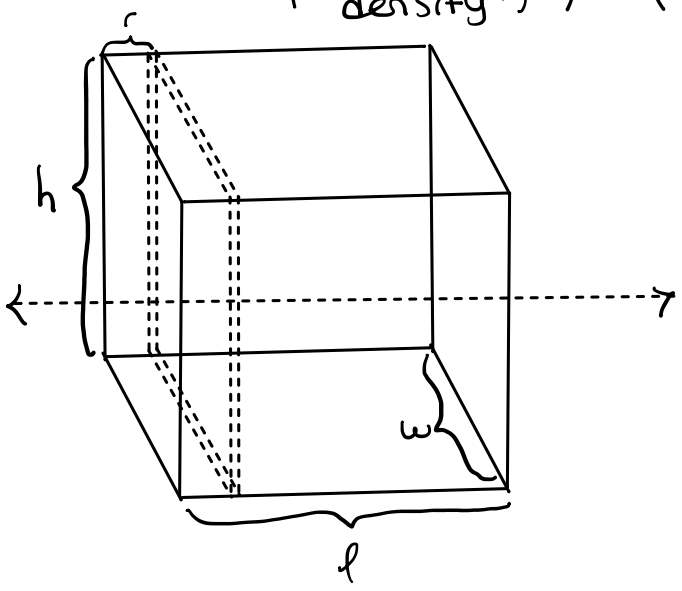
(mass density: ρ) $\left(\rho = \frac{M}{\ell w h}\right)$



from the I of a uniform rectangular slab

$dI = \frac{1}{12} dm\,(h^2+w^2)$

$dm = \rho h w dr$

$\Big\} dI = \frac{1}{12} \rho h w (h^2+w^2) dr$

$$\int dI = \int_0^{\ell} \frac{1}{12} \rho h w (h^2+w^3) dr = \frac{1}{12} \rho \ell w h (h^2+w^3) = \frac{1}{12} \ell h w (h^2+w^2) \frac{M}{\ell h w} = \frac{1}{12} M (h^2+w^2)$$