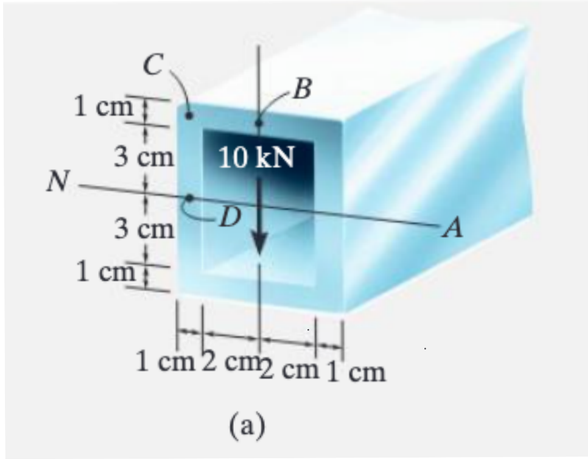
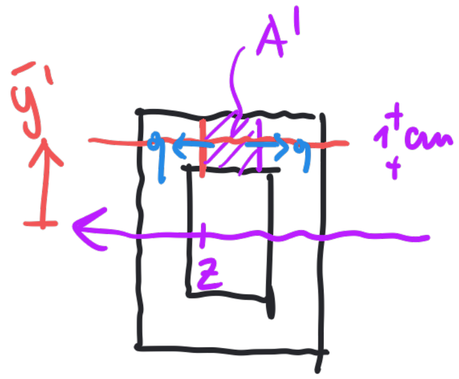


(a)

$$2q = \frac{VQ}{I}$$

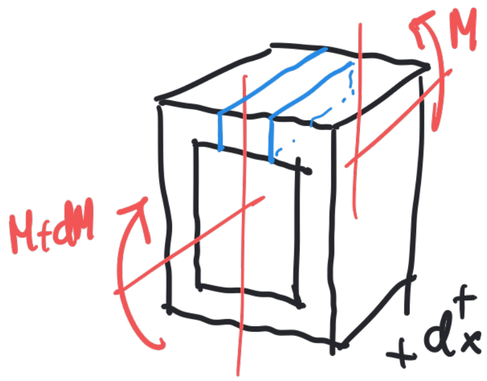
$$I = \frac{1}{12}(6\,cm)(8\,cm)^3 - \frac{1}{12}(4\,cm)(6\,cm)^3$$

$$= 184\,cm^4$$

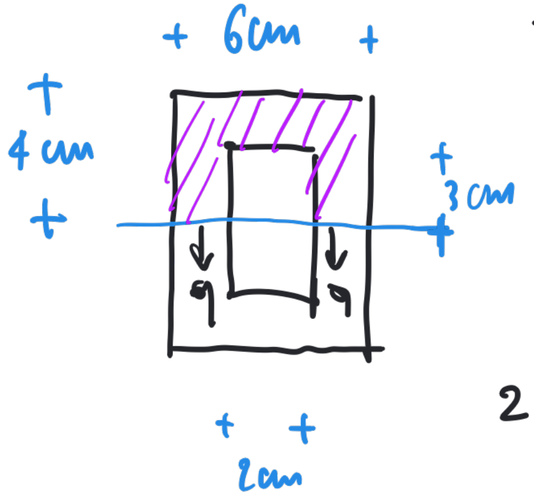


$$A' = 22\,cm^2 \cdot 1\,cm \qquad \bar{y}' = 3.5\,cm$$

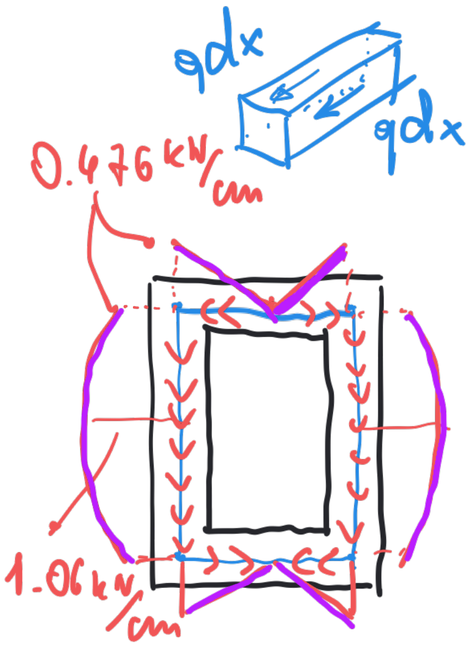
$$2q = \frac{10\,kN}{184\,cm^4} \cdot (22\,cm^2)\,3.5\,cm$$



$$z = 2.5\,cm \Rightarrow 2q = \frac{10\,kN}{184\,cm^4}\,17.5\,cm^3 = 0.951\,kN/cm$$



$$\Rightarrow q = 0.476\,kN/cm$$



$$Q = (2\,cm)(4\,cm)(6\,cm) - (1.5\,cm)(2\,cm)(3\,cm)$$

$$= 39\,cm^3$$

$$2q = \frac{10\,kN}{184\,cm^4}\,39\,cm^3 = 2.11\,kN/cm$$

$$\Rightarrow q = 1.06\,kN/cm$$