

[Remarks:](#) See §4.4, pages 168 till 170

See §4.5, pages 171 till 184

See §4.6, pages 184 till 186

[Answers:](#)

a. $F = 640 \text{ kN}$

b. $e = 100 \text{ mm}$

[Explanation:](#)

a. From the stress diagram: $\sigma_{\text{NC}} = -4 \text{ N/mm}^2$

$$N = A\sigma_{\text{NC}} = -640 \times 10^3 \text{ N}$$

b. Working with absolute values:

Maximum bending stress: $\sigma = 6 \text{ N/mm}^2$

$$M = W\sigma = \frac{1}{6}bh^2\sigma = \frac{1}{6}(400 \text{ mm})^3(6 \text{ N/mm}^2) = 64 \times 10^6 \text{ Nmm}$$

Eccentricity (location of point of application of the force F):

$$e = \left| \frac{M}{N} \right| = 100 \text{ mm}$$