

$$\frac{5}{384} \cdot \frac{q L^4}{E \cdot \gamma}$$

Metric

$$q = 78.87 \text{ kg/m} \Rightarrow 78.87 \times 9.81 \approx 774 \left( \frac{\text{N}}{\text{m}} \right) \Rightarrow 0.774 \left( \frac{\text{N}}{\text{mm}} \right)$$

$$L = 6(\text{m}) \Rightarrow 6000(\text{mm}) \Rightarrow L^4 = (6000)^4 (\text{mm}^4)$$

$$E = 206.8 (\text{GPa}) \Rightarrow 206.8 \times 1000 \left( \frac{\text{N}}{\text{mm}^2} \right)$$

$$\gamma = 2.7725 \times 10^7 (\text{mm}^4)$$

$$\frac{5}{384} \cdot \frac{0.774 \times (6000)^4}{(206.8 \times 1000) \times 2.7725 \times 10^7} = 2.27 (\text{mm})$$