

Remarks: See §2.2.1, pages 19 till 21
 See §2.3, pages 24 till 26
 See §2.6, pages 34 onwards

Answers:

- a. $EA = 35 \text{ MN}$
 b. $\Delta\ell = 8,4 \text{ mm}$

Explanation:

$$\text{a. } \Delta\ell^{(\text{I})} = \Delta\ell^{(\text{II})} \text{ of } \frac{F\ell_1}{EA_1} + \frac{F\ell_2}{EA_2} = \frac{F\ell}{EA}$$

$$EA = \frac{(4,2 \text{ m})(30 \text{ MN})(40 \text{ MN})}{(1,8 \text{ m})(40 \text{ MN}) + (2,4 \text{ m})(30 \text{ MN})} = 35 \text{ MN}$$

$$\text{b. } \Delta\ell = \frac{(70 \times 10^3 \text{ N})(4,2 \times 10^3 \text{ mm})}{35 \times 10^6 \text{ N}} = 8,4 \text{ mm}$$