

### Exercise 10-2

$$\underline{(a)} \quad \frac{F}{A} = Y \frac{\Delta l}{l_0} \quad \therefore \Delta l = \frac{F l_0}{YA} = \frac{mg l_0}{YA}$$

$$\therefore \Delta l = \frac{(1.10 \text{ kg})(9.80 \text{ m/s}^2)(0.650 \text{ m})}{(2.00 \times 10^7 \text{ N/m}^2)(3.00 \times 10^{-6} \text{ m}^2)} = 0.117 \text{ m}$$

$$\therefore l = l_0 + \Delta l = (0.650 + 0.117) \text{ m} = 0.767 \text{ m}$$

(b) Similar to (a), except that  $g = 2.00 \text{ m/s}^2$

$$\Rightarrow \Delta l = 0.024 \text{ m}$$

$$\Rightarrow l = 0.674 \text{ m}$$