

### Question 32568

$$\Delta x_1 = 2 \text{ cm}; \Delta x_2 = 3 \text{ cm}; F_1 = 25 \text{ N} .$$

According to Hooke's law,  $|F| = k \Delta x$ , where  $k$  is the characteristic of the spring.

For an extension  $\Delta x_1 = 2 \text{ cm}$ ,  $|F_1| = k \Delta x_1$ , from which  $k = \frac{F_1}{\Delta x_1}$ .

For  $\Delta x_2 = 3 \text{ cm}$ ,  $|F_2| = k \Delta x_2$ , and using expression for  $k$  above, obtain

$$F_2 = \frac{F_1}{\Delta x_1} \cdot \Delta x_2 = 37.5 \text{ N}$$