

1. The potential energy stored by the spring is given by $U = \frac{1}{2}kx^2$, where k is the spring constant and x is the displacement of the end of the spring from its position when the spring is in equilibrium. Thus

$$k = \frac{2U}{x^2} = \frac{2(25 \text{ J})}{(0.075 \text{ m})^2} = 8.9 \times 10^3 \text{ N/m} .$$