

Hooke's Law

For a material behaving elastically, the extension, x (or compression) is proportional to the force, F , applied.

$$F = kx$$

$$F \propto X$$

Gradient = spring constant, k

Spring Constant, $k = 10/0.2 = 50\text{NM}^{-1}$

Means how much is needed to get 1m of extension from the spring.

Spring Constant = Stiffness

Springs end on end have half the spring constant of a single spring and the single spring has half the spring constant of the springs side by side.

Work Done = Force $\times$ Distance

$$E = \frac{1}{2}Fx$$

$$E = \frac{1}{2}kx^2$$

If you double the extension of a spring you are quadrupling the energy.

