


a. $U_{\text{spring}} = \frac{1}{2} K x^2$

$E_i = \frac{1}{2} K x^2$

Transferred to KE once it loses contact

cell 

$\rightarrow v$

$v = \frac{d}{t}$

$t = \frac{d}{v}$

↑ same for both

$v_1 = \frac{d_1}{t}$

$v_1 t = d_1$

$t = \frac{d_1}{v_1}$

$v_2 = \frac{d_2}{t}$

$v_2 = \frac{d_2}{1} \cdot \frac{v_1}{d_1}$

$= \frac{d_2 v_1}{d_1}$

$\frac{1}{2} K x^2 = \frac{1}{2} m v^2$

$x = \sqrt{\frac{m v^2}{k}}$

$x_1 = \sqrt{\frac{m v_1^2}{k}} = \frac{\sqrt{m}}{\sqrt{k}} v_1$

$x_2 = \sqrt{\frac{m v_2^2}{k}} = \frac{\sqrt{m}}{\sqrt{k}} v_2$

$x_1 = \sqrt{\frac{m}{k}} v_1$

$\sqrt{\frac{m}{k}} = \frac{x_1}{v_1}$

$x_2 = \frac{x_1}{v_1} \cdot \frac{d_2 v_1}{d_1}$

$x_2 = \frac{x_1 d_2}{d_1}$

$= \frac{0.011 \cdot 2.2}{1.93}$

$= 0.0125 \text{ m}$

$= 0.0125 \text{ m}$

or 1.25 cm