Spencer Tamburello

Q9

1st try, ball goes 1.93 m

$x = v \cdot t$ → t will be same

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

$U_s = \frac{1}{2} k x^2$

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

$k x^2 = m v^2$

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

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

(d is distance to target)
(x is spring comp)

$\frac{x_1}{v_1} = \frac{x_2}{v_2}$

$\frac{d_1 \sqrt{m}}{\sqrt{k x^2}} = \frac{d_2 \sqrt{m}}{\sqrt{k x^2}}$

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

$d_1 x_2 = d_2 x_1$

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

$x_2 = 0.0125 \ m$

$x_2 = 1.25 \ cm$