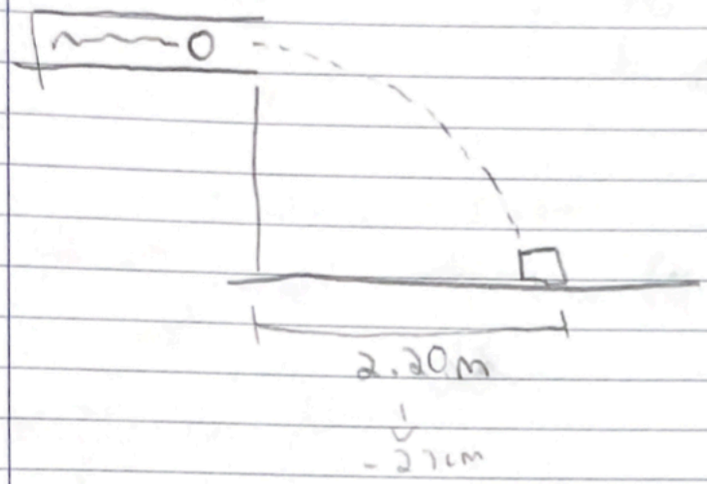
Nolan A. Kachmar

Show Work 1 (Question 9)



Bobby

$\frac{1}{2}kx^2 + \frac{1}{2}mv^2 = \frac{1}{2}x^2 + \frac{1}{2}mv^2$

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

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

$y = \frac{1}{2}at^2$

$y = \frac{1}{2}(10)t^2$

$\Delta x = v_i t + \frac{1}{2}at^2$

$1.93 = v_i t = \frac{1}{2}at^2$

$v_i = \frac{1.93}{t}$

$\frac{1.93}{t} = \sqrt{\frac{x^2k}{m}}$

$\frac{1.93^2}{t^2} = \frac{x^2k}{m}$

$\frac{m}{k+2} = \frac{x^2}{1.93^2}$

$\frac{m}{k+2} = 3.25 \times 10^5$

Rhoda

$\frac{1}{2}kx^2 + \frac{1}{2}mv^2 = \frac{1}{2}k(0)^2 + \frac{1}{2}mv^2$

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

$v_i = \sqrt{\frac{kx^2}{m}}$

$y = \frac{1}{2}at^2$

$y = \frac{1}{2}(10)t^2$

$\Delta x = v_i t + \frac{1}{2}at^2$

$2.2 = v_i t + \frac{1}{2}at^2$

$v_i = \frac{2.2}{t}$

$\frac{2.2}{t} = \sqrt{\frac{kx^2}{m}}$

$\sqrt{\left(\frac{2.2}{t}\right)^2 \cdot \frac{m}{k}} = x$

$\frac{m}{kt^2} = \frac{x^2}{2.2^2}$

$3.25 \times 10^5 = \frac{x^2}{2.2^2}$

$x = 1.25\text{cm}$ or 0.0125m