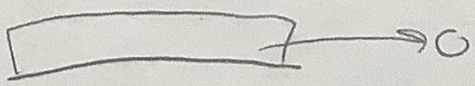
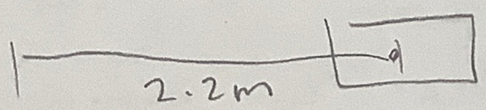
Madison Allegretti SW (#9) Jihe Han



Bobby compresses spring 1.1cm, falls short 27cm of center
How far should Rhoda compress?



Bobby:

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

$\sqrt{\frac{kx_B^2}{m}} = v_{launch_B}\ (v_{i_B})$

$= x_B\sqrt{\frac{k}{m}}$

$d_B = v_{i_B}\Delta t = 2.2m - 0.27 = 1.93 = v_{i_B}\Delta t$ (1)

$d_B = v_{i_B}\Delta t$

Rhoda: $v_{launch_R} = x_R\sqrt{\frac{k}{m}} = 2.2m = v_{i_R}\Delta t$ (2)

$d_R = v_{i_R}\Delta t$

1/2:

$\frac{1.93}{2.2} = \frac{v_{i_B}}{v_{i_R}} \Rightarrow \frac{d_B}{d_R} = \frac{v_{i_B}}{v_{i_R}}$

$0.88 = \frac{x_B\sqrt{\frac{k}{m}}}{x_R\sqrt{\frac{k}{m}}} = \frac{x_B}{x_R}$ $\quad \frac{d_B}{d_R} = \frac{x_B}{x_R}$ $\quad \frac{x_B}{0.11} = \frac{0.01m}{0.11}$ $\quad x_B = 0.01m$

$\frac{1.93}{2.2} = \frac{0.01m}{x_R}$ $\quad x_R = 1.25cm$

Rhoda must compress it 1.25cm