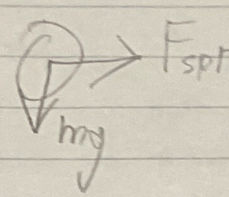
Final SW1 Q9



$\Delta y = 0t + \frac{1}{2}(-10)t^2$

$\Delta y = -5t^2$

$.011^2 \frac{kt^2}{m} = 1.93^2$

$\frac{kt^2}{m}$ constant

constant $= \frac{1.93^2}{0.011^2} = 30784.2975$

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

$\frac{1}{2}k(.011)^2 = \frac{1}{2}m\left(\frac{1.93}{t}\right)^2$

$.011^2 k = \frac{1.93^2 m}{t^2}$

k = constant
m = constant
t = constant since gravity is only force in y direction and table height is constant

$x^2(\text{constant}) = 2.2^2$

$x = \sqrt{\frac{2.2^2}{30784.2975}} = 0.012539\,m$

1.2539cm