9)

$$U_{si} = KE_F$$
$$\tfrac{1}{2}Kx^2 = \tfrac{1}{2}mv_x^2$$
$$\sqrt{\frac{Kx^2}{m}} = V_x \qquad x = 0.011$$
$$0.011\sqrt{\tfrac{K}{m}} = V_x$$

X direction

$\Delta x = 2.12 - 0.27 = 1.93\ m$
$a_x = 0$
$V_x = 0.011\sqrt{\tfrac{K}{m}}$
$\Delta t = ?$

$1.93 = 0.011\sqrt{\tfrac{K}{m}}\ \Delta t$

$1.93 = 0.011\sqrt{\tfrac{K}{m}}\left(\sqrt{y}/5\right)$

$\left(\dfrac{9.65}{0.011\sqrt{\tfrac{K}{m}}}\right)^2 = \left(\sqrt{y}\right)^2$

$\left(\dfrac{9.65}{0.011\sqrt{\tfrac{K}{m}}}\right)^2 = y$

y-direction

$\Delta y = ?$
$a_y = 10$ $\Delta y = \tfrac{1}{2}(10)t^2$
$V_y = 0$ $\Delta y = 5t^2$
$\Delta t = ?$ $\sqrt{\dfrac{\Delta y}{5}} = t$

$KE_I = U_{yF}$
$\tfrac{1}{2}mv^2$

$\Delta x = 2.2$
$a_x = 0$
$V_x = ?$

$\Delta x = V_x \Delta t$

$2.2 = V_x\left(\dfrac{\left(\frac{9.65}{0.011\sqrt{\frac{K}{m}}}\right)}{\sqrt{5}}\right)$

$\dfrac{2.2\sqrt{5}}{\left(\frac{9.65}{0.011\sqrt{\frac{K}{m}}}\right)} = V_x$

$\tfrac{1}{2}Kx^2 = 24.2m\left(\dfrac{0.011\sqrt{\frac{K}{m}}}{9.65}\right)^2$

$\tfrac{1}{4}x^2 = 24.2\left(\dfrac{0.011}{9.65}\right)^2$

$\Delta y = \left(\dfrac{9.65}{0.011\sqrt{\frac{K}{m}}}\right)^2$
$a_y = 10$
$V_y = 0$
$\Delta t = ?$

$\sqrt{\left(\dfrac{9.65}{0.011\sqrt{\frac{K}{m}}}\right)^2} = \tfrac{1}{2}(10)t^2$

$\sqrt{\dfrac{\left(\frac{9.65}{0.011\sqrt{\frac{K}{m}}}\right)^2}{5}} = t^2$

$\dfrac{\left(\frac{9.65}{0.011\sqrt{\frac{K}{m}}}\right)}{\sqrt{5}} = t$

$U_{si} = KE_F$

$\tfrac{1}{2}Kx^2 = \tfrac{1}{2}m\left(\dfrac{2.2\sqrt{5}}{\frac{9.65}{0.011\sqrt{\frac{K}{m}}}}\right)^2$

$\boxed{X = 0.561\ cm}$

(margin, partially visible)

$1.2 \times 10^-$

$\neq 1.14 \times 10^-$
light ye
sec

$\boxed{0.826c}$