$m_b v_b = m_{(w+b)} V$ $\qquad v_b = \frac{m_{(w+b)}\sqrt{2gh}}{m_b}$

$\frac{1}{2} m_{(w+b)} V^2 = m_{(w+b)} g h$

$V = \sqrt{2gh}$ $\qquad (0.1)(100) = 5.1\, V$

$V = 1.96$

$\frac{1}{2}(0.1)(100)^2 = 500$

$\frac{1}{2}(5.1)(1.96)^2 = 9.80$

$\frac{1}{2} k x^2 = \mu_k m g x_f$

$k x^2 = 2 \mu_k m g x_f$

$\mu_k = \frac{k x^2}{2 m g x_f}$