

Work/Energy Quiz from 2011 as practice

1. Horiz spring

F_{s0}
 $u=0$
 $v=mc$
 PE_s
 $ME_A = ME'_A$
 $\frac{1}{2}kx^2 = \frac{1}{2}mv^2$
 $x = \sqrt{\frac{mv^2}{k}}$
 $v = \sqrt{\frac{(0.15)(15)^2}{215}}$
 $v = 0.376 \text{ m/s}$
 $x = 0.376 \text{ m}$

2. Throwing a ball

95 N
 $heat \text{ lost}$
 $W_{net} = Fd$
 $= (95)(0.78)$
 $= 66.3 \text{ J}$
 $KE_i = \frac{1}{2}(0.125)(9.84)^2$
 $KE_f = 0$
 $W_{gravity} = -60.5 \text{ J}$
 $W_{net} = 6.05 \text{ J}$
 $\% \text{ eff} = \frac{W_o}{W_i} = \frac{6.05}{66.3} \times 100 = 9.1\%$

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