P#13

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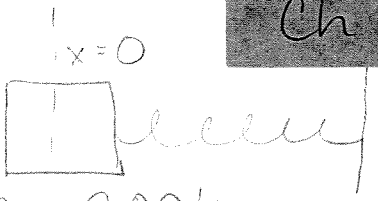

$m_1 = .010\ kg$
$V_1 = 300\ m/s$

$m_2 = 2.00\ kg$
$V_2 = 0\ m/s$

$k = 19.6\ N/m$
$x = 0\ m$

Find v of bullet-block combination...

$$m_1 \cdot v_1 + m_2 \cdot v_2 = (m_1 + m_2) \cdot v'$$

$$(.01\ kg)(300\ m/s) + (2.0\ kg)(0) = (.01\ kg + 2.0\ kg) \cdot v'$$

$$v' = 1.49\ m/s$$

$X_2 = 0$
$V_2 = 1.49\ m/s$

$X_3 = ?$
$V_3 = 0\ m/s$

$$KE_2 + PE_2 = KE_3 + PE_3$$

$$\tfrac{1}{2}(2.010\ kg)(1.49\ m/s)^2 = \tfrac{1}{2} \cdot (19.6\ N/m) \cdot x_3^2$$

$$\therefore \quad x_3 = .478\ m$$