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1.) P.) Assuming the ball is moving horizontally, what is the average force (Ns]

R.)

O.) $m_1 = .145$ kg $\quad F_{avg} \cdot t = m(V_F - V_i)$

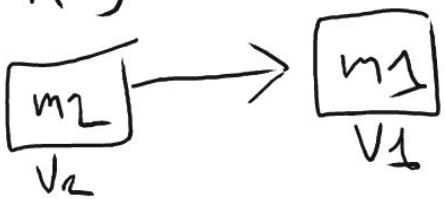
$v_1 = -41$ m/s $\quad V_F = 37$ m/s $\quad t = 3$ ms $= 0.003$ sec

C.) $F_{avg} = \frac{m(V_F - V_i)}{t} = \frac{.145(37+41 \text{ m/s})}{.003 \text{ sec}} = \frac{.145 \text{kg} \cdot 78 \text{ m/s}}{0.003} =$

3770 N

P.) Find ME after perfectly inelastic collision

R.)



O.) $m_2 = 3kg$ $v_2 = 8 m/s$

$m_1 = 2kg$ $v_1 = 0 m/s$

$KE_1 + KE_2 = KE_{sys} + E_{loss}$

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

$KE = mv^2$

Finding v'

C.) $v' = \frac{m_1 v_1 + m_2 v_2}{m_1 + m_2} = \frac{m_2 v_2}{m_1 + m_2} = \frac{3kg \cdot 8 m/s}{5kg} = \frac{24}{5} = 4.8 m/s$

Finding E_{loss}

$E_{loss} = KE_1 + KE_2 - KE_f = \frac{1}{2}(m_2 v_2^2 - (m_2 + m_1) v'^2)$

$= \frac{1}{2}(3kg(8 m/s)^2 - 5kg(4.8 m/s)^2) = \frac{1}{2}(76.8) = 38.4 J$

P.) Find v_1 and v_1' [m/s]

R.)

G.) $m_1 = 4kg$ $m_2 = 6kg$ $v_2 = 7m/s$ $v_2' = 5m/s$

CoR: $e = \frac{-(v_1' - v_2')}{v_1 - v_2} = .7$ $m_1 v_1 + m_2 v_2 = m_1 v_1' + m_2 v_2'$

(.)1.) Rearrange with knowns on right on unknown on left

$m_2 v_2 - m_2 v_2' = m_1 v_1' - m_1 v_1$

$4kg \cdot v_2 + -4kg \cdot v_2' = 6kg(5m/s - 7m/s) \rightarrow 4v_2 + -4v_2' = -12 \rightarrow$ Kref

2.) $.7(v_1 - 1h) = -v_1' + v_2'$ $.7v_1 - .v_2 = -v_1' + v_2'$ $[-.7v_2 - v_2' = -v_1' - .7]$

$.7v_2 + v_2' = 9.9$

.7	+1	9.9	$v_1 = 0.59$	
			$v_1 = 7.05$	