P #13

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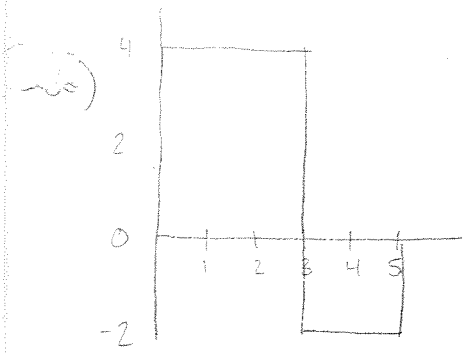

$\Delta p = F \cdot t$ or area under F-t graph

$\Delta p = A = b \cdot h = F \cdot t$ (for 0 - 3 sec)

$\Delta p_{0-3} = (4\,N)(3\,sec)$

$\boxed{\Delta p_{0-3} = 12\ N \cdot s}$

b) $\Delta p = A = b \cdot h = F \cdot t$ (for 3 - 5 sec)

$\Delta p_{3-5} = (-2\,N)(2\,sec) = -4\ Ns$

Total Δp for 0 to 5 sec: $\Delta p_{0-5} = 12\,N \cdot s + -4\,Ns$

$\boxed{\Delta p_{0-5} = 8\ N \cdot s}$

c) $m = 1.5\,kg$
$v_1 = 0\,m/s$
$v_2 = ?$

For 0 to 3 sec:
$\Delta p = 12\,N \cdot s$

$p_1 + \Delta p = p_2$

$m \cdot v_1 + \Delta p = m \cdot v_2$

$(1.5\,kg)(0) + 12\,N \cdot s = (1.5\,kg) \cdot v_2$

$12\,N \cdot s = 1.5 \cdot v_2$

$\boxed{v_2 = 8\ m/s}$

For 0 to 5 sec:
$\Delta p = 8\,N \cdot s$

$m \cdot v_1 + \Delta p = m \cdot v_2$

$(1.5\,kg)(0) + 8\,N \cdot s = (1.5\,kg)v_2$

$\boxed{v_2 = 5.3\ m/s}$