p208

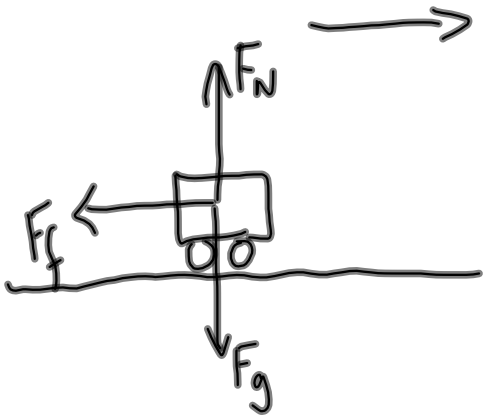
32. $m = 2200\,kg$

$V_1 = 45\,km/h$

$V_2 = 0$

$\mu = 0.70$

$\Delta d = ?$



$$\vec{F}_{net} = m\vec{a}$$

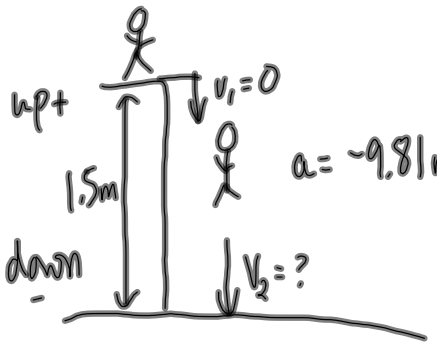
$$-F_f = ma$$

$$-\mu F_N = ma$$

① Find a

② Find Δd

33.



$m = 55.0\ kg$

a) V (at impact)

b) F=? ($\Delta t = 8.00 \times 10^{-3}\ s$)

$V_2^2 = V_1^2 + 2a\Delta d$

$V_2^2 = 0^2 + 2(-9.81\ m/s^2)(-1.5\ m)$

$V_2 = \pm 5.4\ m/s$

$V_2 = -5.4\ m/s$

$\vec{V}_2 = 5.4\ m/s\ [down]$

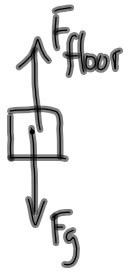
b) At impact $V_1 = 5.4\ m/s\ [down]$ $V_2 = 0\ m/s$

$\Delta t = 8.00 \times 10^{-3}\ s$

$\vec{F}\Delta t = m\Delta\vec{V}$ or $\vec{F}_{net} = m\vec{a}$

$\vec{F} = \frac{m\Delta\vec{V}}{\Delta t}$

$F = \frac{(55.0\ kg)(0 - (-5.4\ m/s))}{8.00 \times 10^{-3}\ s}$ (V_2 - V_1)



$F_{net} = 3.7 \times 10^4\ N$ up

$F_{net} = F_{floor} - F_g$ $(55.0\ kg)(9.81\ m/s^2)$

Review: p210/1-8 & p212/29,30,32,33,36,39-47