P #13

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$m = 50.0\ kg$

$A = 26.0\ cm^2 \cdot \left(\frac{1\ m}{100\ cm}\right)^2 = .0026\ m^2$

a) $F = m \cdot g = (50\ kg)(9.8\ m/s^2)$

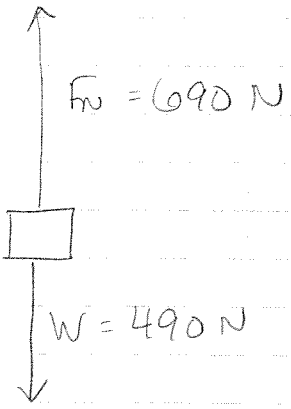
$F = 490\ N$

$P = \frac{F}{A} = \frac{490\ N}{.0026\ m^2}$

$P = 188{,}000\ Pa$

b) $a = 4.00\ m/s^2$
$m = 50.0\ kg$
$W = 490\ N$

$F_{net} = m \cdot a$
$= (50\ kg)(4.0\ m/s^2)$
$= 200\ N$



$F_{net} = F_N - W$
$200\ N = F_N - 490\ N$

$F_N = 690\ N$

$P = \frac{F}{A} = \frac{690\ N}{.0026\ m^2}$

$265{,}000\ Pa$