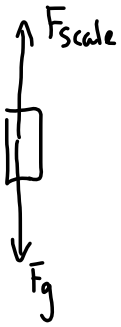
Apparent Weight (mp 184)

$m = 55\,kg$

a) $\vec{F}_{scale} = ?$ (at rest)

b) $\vec{F}_{scale} = ?$ $(a = 0.75\,m/s^2$ going up)

a) at rest



$a = 0$

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

$F_{scale} - F_g = ma$ (0)

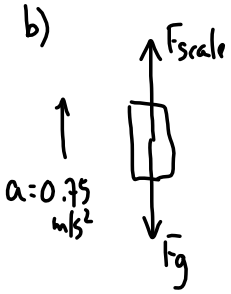
$F_{scale} = F_g$

$F_{scale} = (55kg)(9.81 m/s^2)$

$F_{scale} = 5.4 \times 10^2\,N$

$-9.81\,m/s^2$ ← if the elevator cable is cut.

b)



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

$F_{scale} - F_g = ma$

$F_{scale} - 539.55N = (55kg)(+0.75 m/s^2)$

$-539.55N$

$F_{scale} - 539.55N = 41.25N$

$F_{scale} = 5.8 \times 10^2\,N$ ON (feel weightless)

+ acc => feel heavier
- going up / speeding up
- going down / slowing down

- acc => feel lighter
- going up / slowing down
- going down / speeding up

TO DO

1. PP | 182 | 18 + 19
2. PP | 186

See webpage for review questions

TEST - Tuesday

Chapter 4 - Weight + friction

- mass
- weight
- inertia
- calculating weight: $F_g = mg$
- friction - static/kinetic: $F_f = \mu F_N$
- FBDs!

Chapter 5 - Newton's Laws

1. Law of Inertia
2. $F_{net} = ma$
3. Action-Reaction ($\vec{F}_{A\,on\,B} = -\vec{F}_{B\,on\,A}$)

Kinematics $\xleftarrow{a}$ dynamics

FBD's!

towing problems

apparent weight

NOT ON TEST

§5-4 Impulse + Momentum

Forces at angles in §5-2.