A +

Big Exam #2 Use both sides. Put your name at the end

#1: You take a ride on an "extreme" elevator. Near the end of the assent, you find yourself standing on the ceiling of the elevator, upside down, on your scale, which reads 300 N. This is surprising to you because your mass is 50 kg.
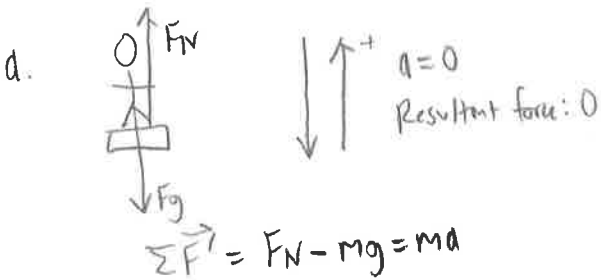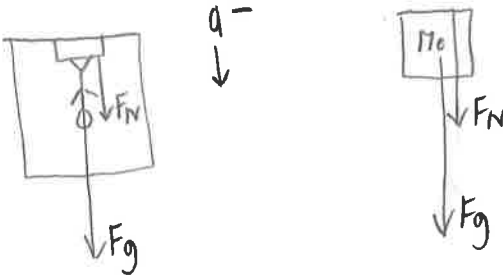
   a) What do you expect the scale to read when you are standing on it on the solid ground?
   b) What is your acceleration at this moment?

$M = 50kg$

Lens: Dynamics

Reason: Considering forces and acceleration

$\Sigma \vec{F} = m\vec{a}$

q^-

F_N

F_g

d.

F_N

F_g

$a = 0$
Resultant force: 0

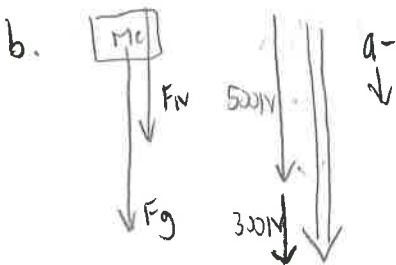$\Sigma \vec{F} = F_N - mg = ma$

$F_N - (50kg)(10m/s^2) = 50kg(0m/s^2)$

$F_N - 500 \, kgm/s^2 = 0 \, kgm/s^2$

$F_N = 500 \, kgm/s^2 = \boxed{500 \, N}$ or 50 kg
if the scale is

nice!

assuming you are
on earth

b.

F_N 500N

F_g 300N

q^-

$\Sigma \vec{F} = F_N + F_g = ma$

$a = \dfrac{F_N + F_g}{m}$

$a = \dfrac{-300kgm/s^2 - 50kg(10m/s^2)}{50kg}$

$= \dfrac{-300kgm/s^2 - 500kgm/s^2}{50kg}$

$= \dfrac{-800kgm/s^2}{50kg} = \boxed{-16m/s^2}$

nice!

A +

Big Exam #2 Use both sides. Put your name at the end

#1: You take a ride on an "extreme" elevator. Near the end of the assent, you find yourself standing on the ceiling of the elevator, upside down, on your scale, which reads 300 N. This is surprising to you because your mass is 50 kg.

    a) What do you expect the scale to read when you are standing on it on the solid ground?
    b) What is your acceleration at this moment?

a) Dynamics Lens because forces and acceleration is involved.

on ground

$$\Sigma \vec{F} = m\vec{a} = F_n - F_g$$
$$= 0$$

Nice!
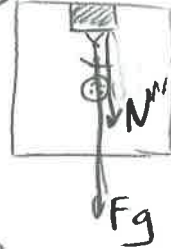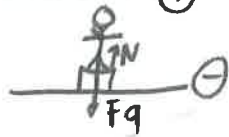
$$F_N = F_g$$
$$F_N = 50 kg \left(10 \frac{m}{s^2}\right) = 500N$$

$\vec{a} = -16 \frac{m}{s^2}$

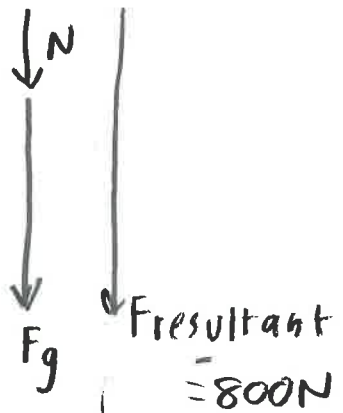b) Dynamics Lens b/c forces are involved and we are solving for acceleration.

$$\Sigma \vec{F} = m\vec{a} = -F_g - F_N(N) \qquad F_N = 300N$$

$$m\vec{a} = -mg - 300N$$

$$\vec{a} = \left(-50kg\left(10\frac{m}{s^2}\right) - 300N\right) / (50kg)$$

$$\vec{a} = \frac{-500N - 300N}{50kg}$$

$$\vec{a} = \frac{-800N}{50kg} = -16\frac{m}{s^2}$$

F_g
$F_{resultant} = 800N$

nice!!

At the end of our assent, the elquator accelerates us 16 $\frac{m}{s^2}$ downward.