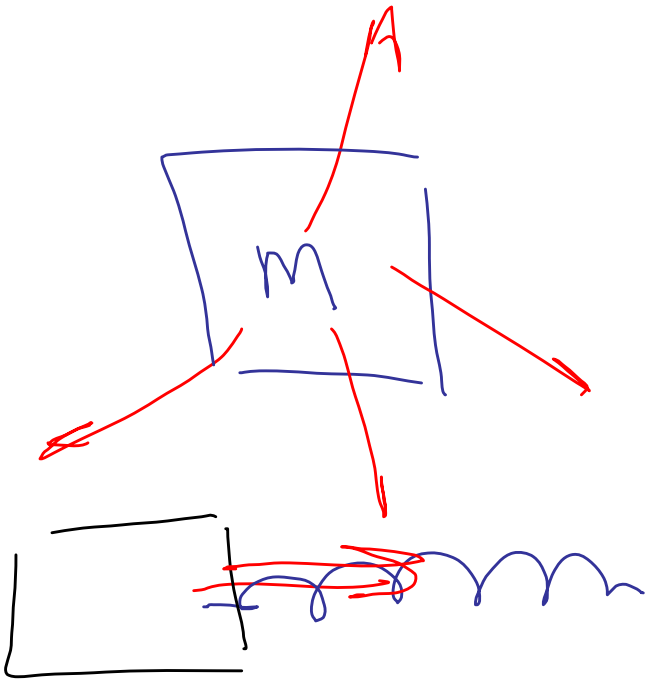
Phys 2110-4 2/6/12

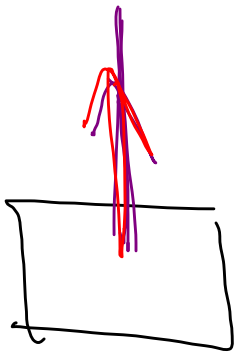
Note Title 2/6/2012

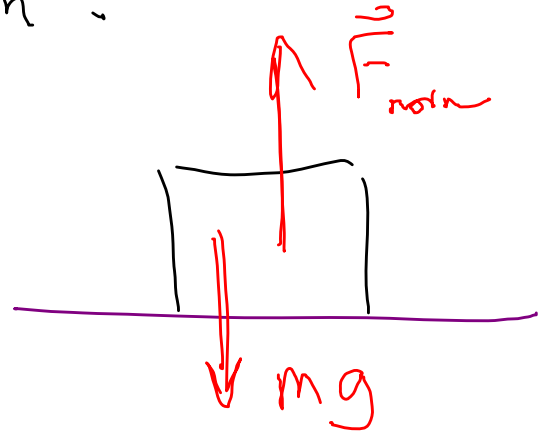
Forces

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

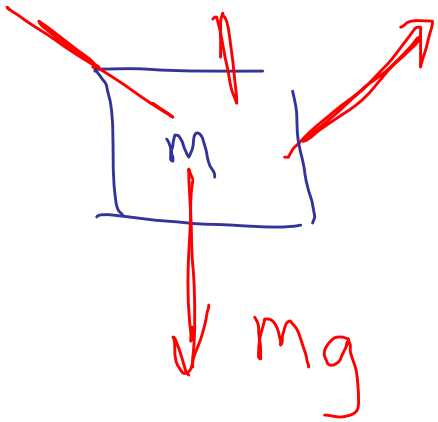


Where do forces come from?





Gravity force

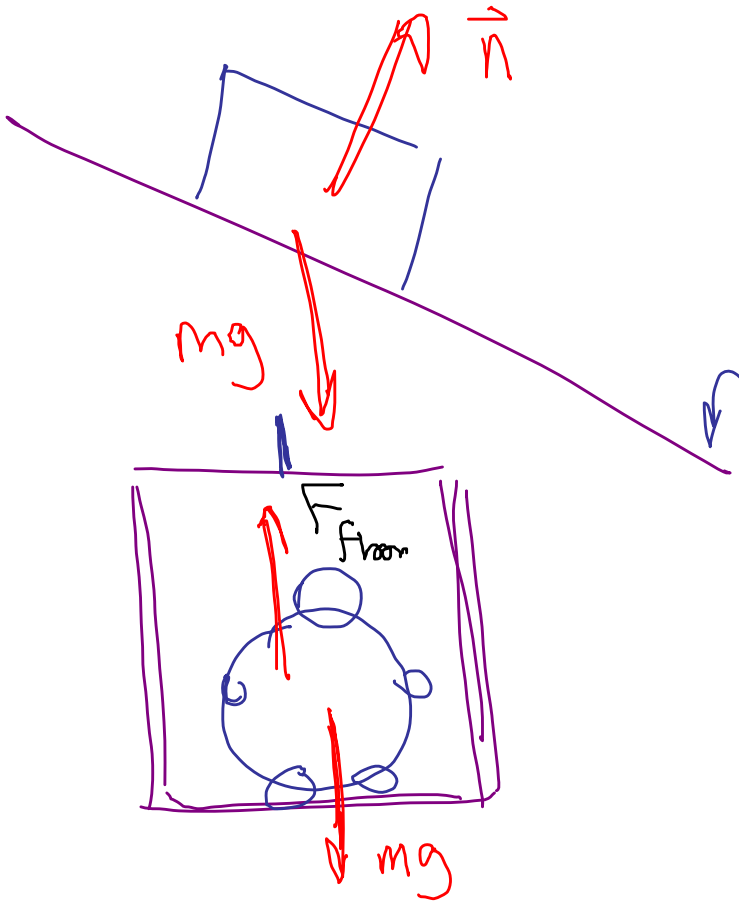


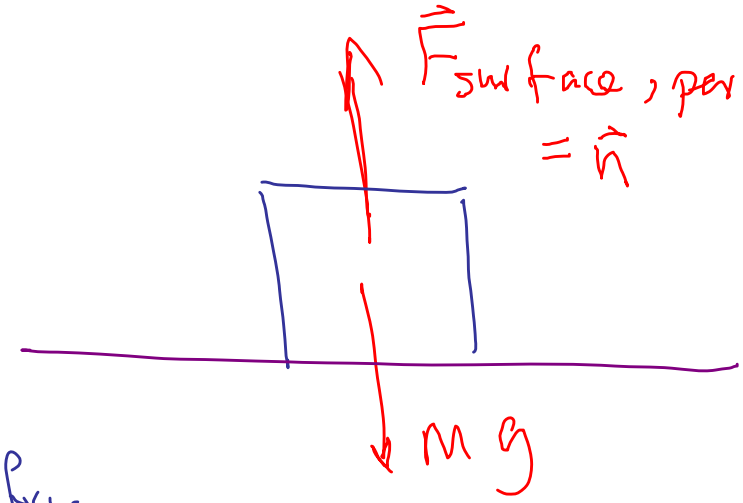
$= -g\hat{j}$

$|\vec{F}_{gra}| = mg$ = weight (magn. of force of gravity)

Weight depends on location.
Mass stays same!

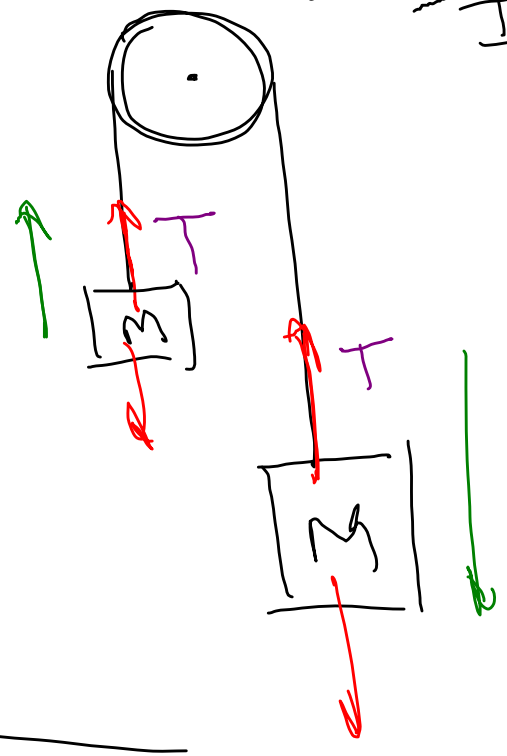
More examples





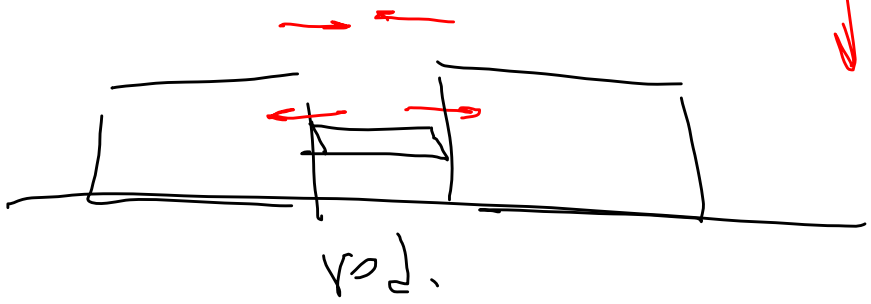
String under tension

Pulley → Ideal no mass, no friction



Tension on both side Same

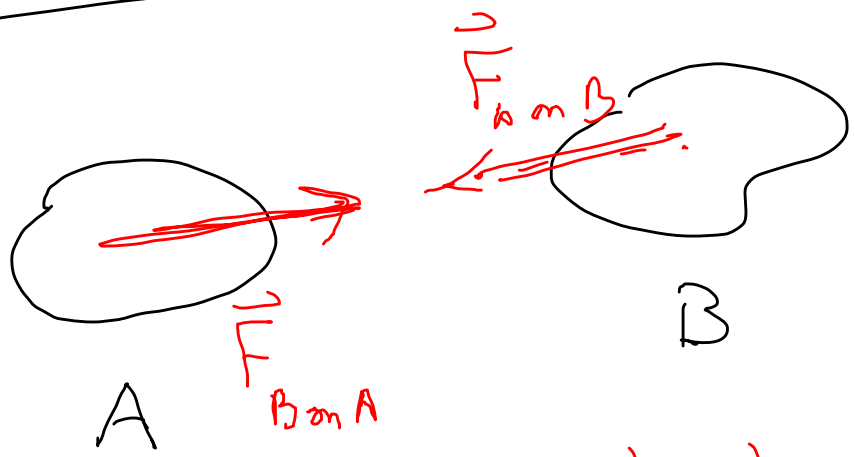
Ch 4 Basic force problems.



rod.

Newton's Third Law

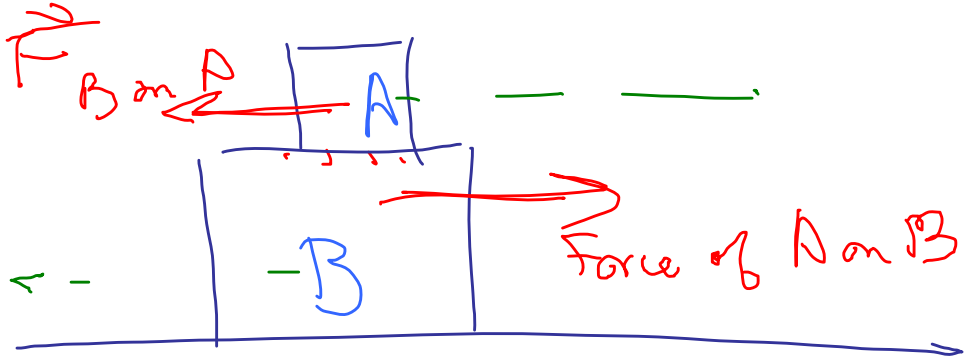
$$\vec{F}_{net} = m\vec{a}$$

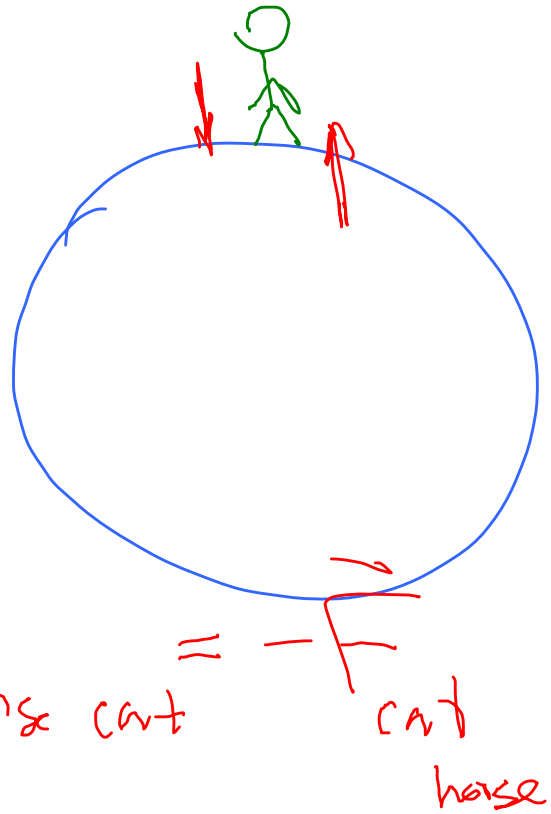


Objects A & B exert forces on one another

Same mag. opposite directions.

Newton's 3rd Law — If object A exerts a force on Obj B then Obj B exerts an opp'ly dir'd force of equal mag on A





Horse paradox

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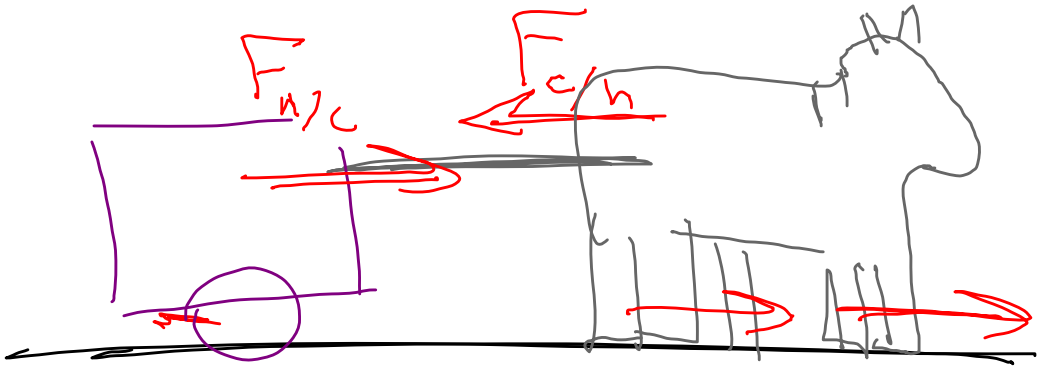
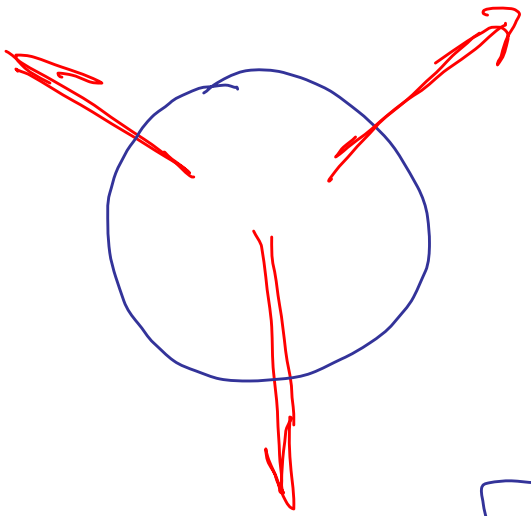


In all problems $\vec{F}_{net} = m\vec{a}$

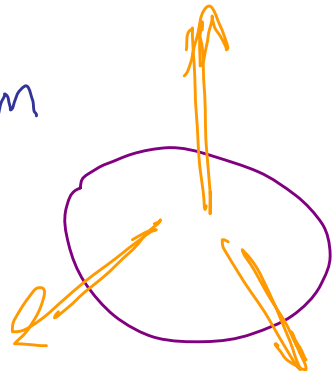


Draw a picture

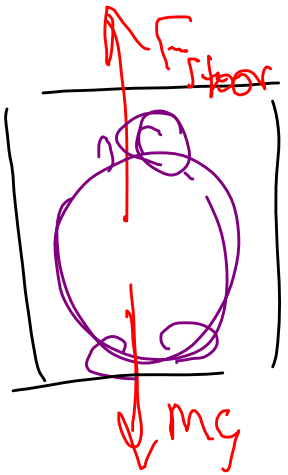
Draw damn picture

DDP

p. 55 Free body diagram



4.29 An elevator accelerates downward $2.4\ m/s^2$. What force does the elevator's floor exert on 52 kg passenger



$$F_{y,net} = F_{floor} - mg$$

$$= m(-2.4\ m/s^2)$$

a

$a_y = -2.4\ m/s^2$

$\therefore 384\ N$ Apparent weight.