NL5 Q: NAME ALL OF THE FORCES ACTING ON YOUR BODY RIGHT NOW. WHAT IS $\vec{F}_{NET}$?

HW 15-17

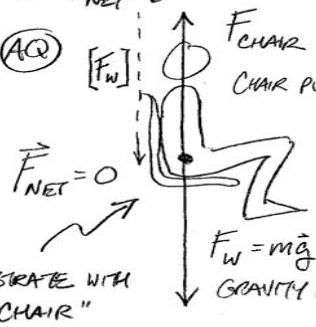
AGENDA

BALANCING FORCES $\vec{F}_{NET}$ vs. $\vec{a}$

ADDING FORCE VECTORS

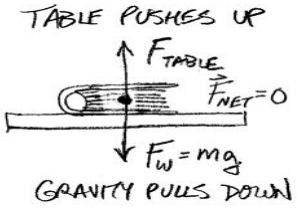
FORCE VECTOR PRACTICE

(AQ) $[F_W]$



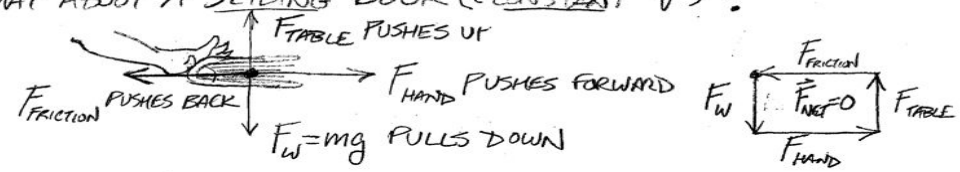
★ DEMONSTRATE WITH "KID CHAIR"

BOOK ON A TABLE:



NO NET FORCE $\rightarrow$ NO ACCELERATION $\quad \vec{F}_{NET} = m\vec{a}$ (both $= 0$)

WHAT ABOUT A SLIDING BOOK (@ CONSTANT $\vec{v}$)?



NO NET FORCE $\vec{F}_{NET}=0$ $\quad\leftrightarrow\quad$ NO ACCELERATION $\vec{a}=0$ $\quad\leftrightarrow\quad$ CONSTANT VELOCITY $\Delta\vec{v}=0$

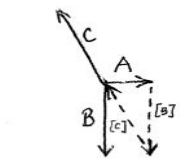
$\vec{F}=m\vec{a}$ $\qquad$ $\vec{a}=\frac{\Delta\vec{v}}{\Delta t}$ $\quad[v=0$ IN ONE INERTIAL R.F.$]$

★ HAND OUT VECTOR DIAGRAMS / STATICS PRACTICE SHEETS

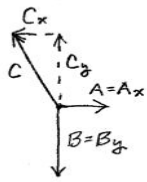
IF $\vec{F}_{NET}=0$, THEN $\vec{F}_{NET}=\langle \vec{F}_{NET_x}, \vec{F}_{NET_y}, \vec{F}_{NET_z}\rangle \overset{\text{ALL COMPONENTS ARE ZERO!}}{=} \langle 0,0,0\rangle$

FIRST 3 STATICS DIAGRAMS:

VECTOR DIAGRAM #2



ADDING GRAPHICALLY



$\vec{F}_{NET_x} = \vec{A}_x + \vec{B}_x + \vec{C}_x = 0$

$\vec{C}_x = -\vec{A}_x$

$\vec{F}_{NET_y} = \vec{A}_y + \vec{B}_y + \vec{C}_y = 0$

$\vec{B}_y = -\vec{C}_y$