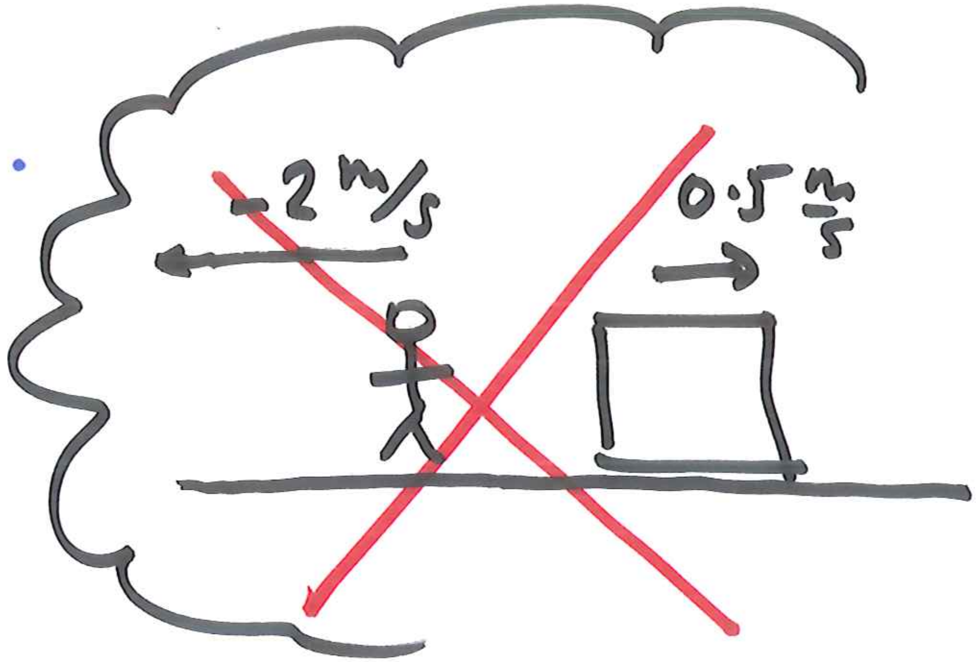
NYU Physics I — 2016-10-13

Agenda — Reading: – Statics, Torque.
– (cross-product).

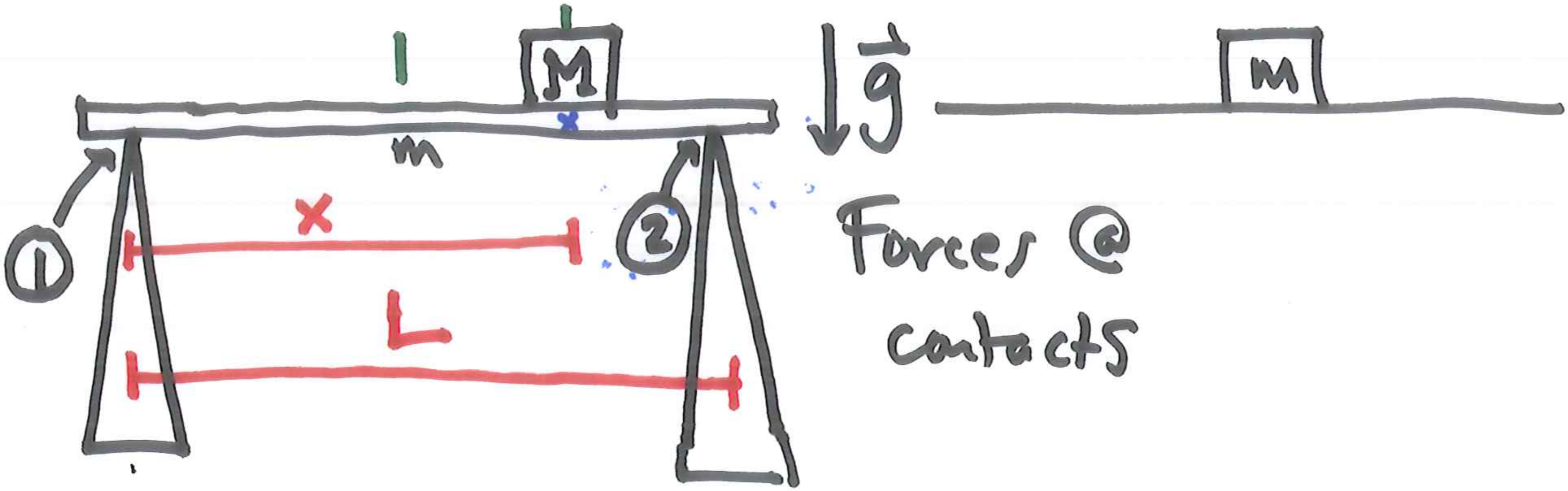
– Physics Colloquium. @ 16:00

– Qs.

– The Table.



www.raise your voice cabaret.com
McKay Giller



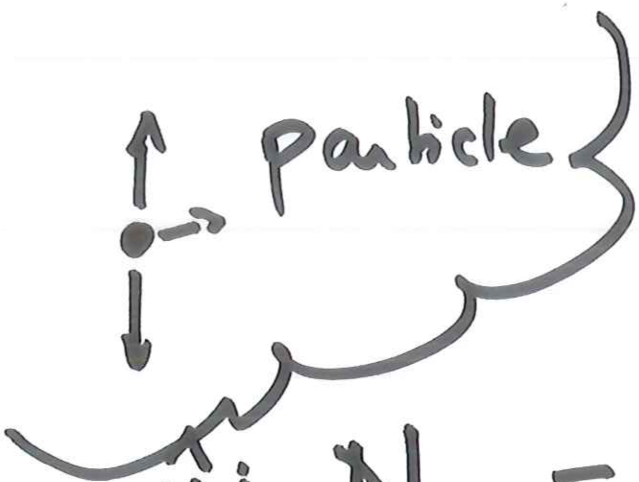
Forces @ contacts

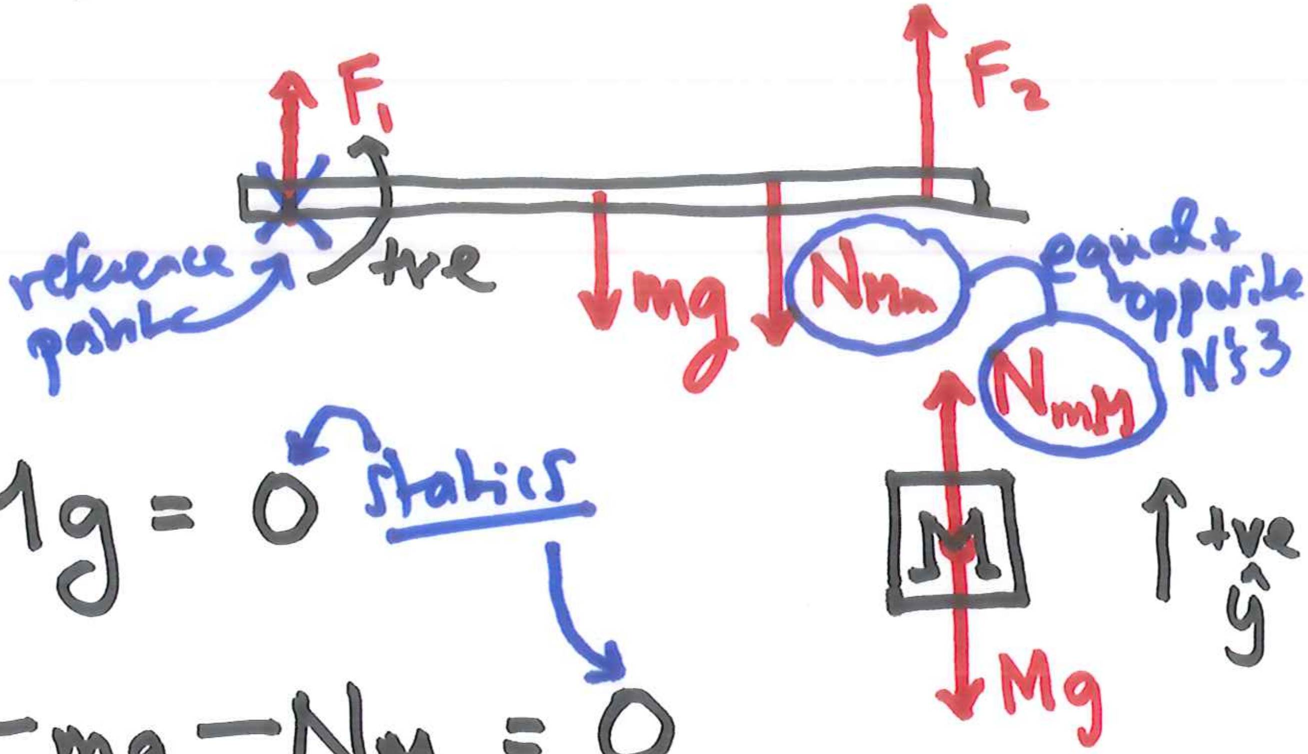
Assume: - table top is uniform in, say, density, thickness, depth, etc

- table top is rigid

approximation
↳ "statics"

$$\frac{x}{L-x} = \frac{F_2}{F_1} \text{ if } m \equiv 0$$





$\hat{y}$: $N_{mM} - Mg = 0$ statics

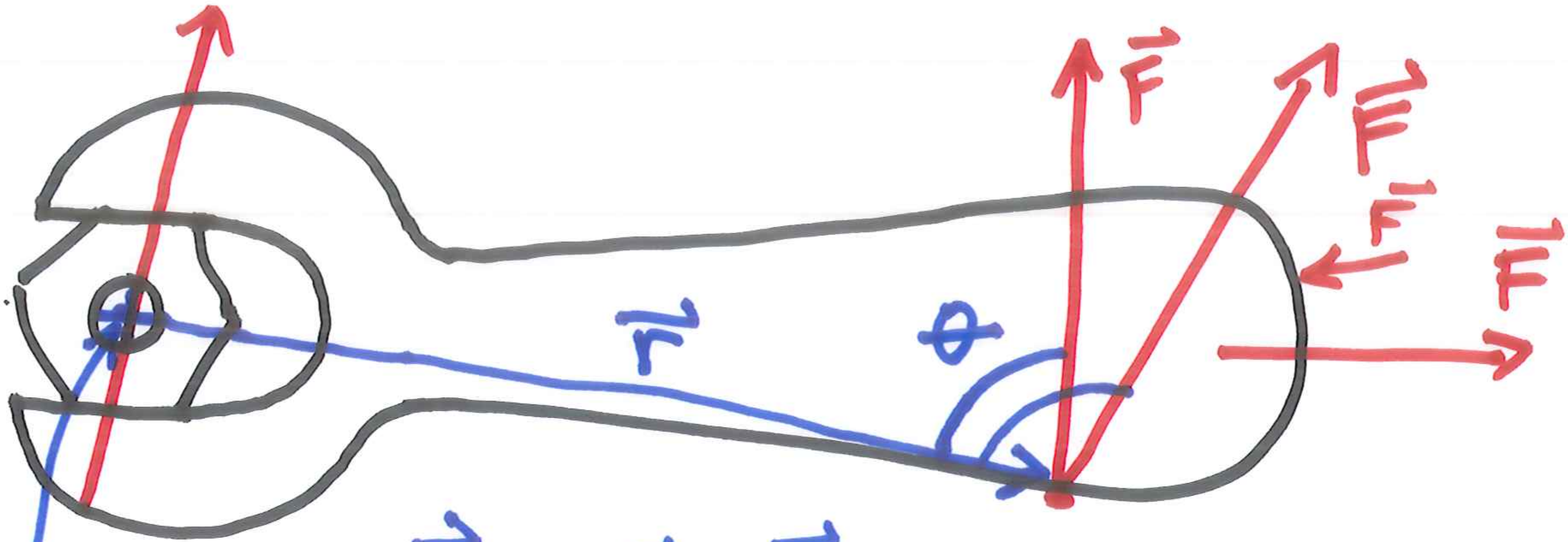
$\hat{y}$: $F_1 + F_2 - mg - N_{Mm} = 0$

$M\vec{g} = -Mg\hat{y}$

N's 3: $N_{mM} = N_{Mm}$

$\therefore\; F_1 + F_2 - mg - Mg = 0$

need torque ← need a reference point



$$\vec{\tau} = \vec{r} \times \vec{F}$$

~~axis~~
reference
point.

$$|\vec{\tau}| = |\vec{r}|\,|\vec{F}| \sin\theta$$

$$\tau:\ LF_2 - xN_{Mm} - \frac{L}{2}mg = 0$$

$$LF_2 - xMg - \frac{L}{2}mg = 0$$

$$F_2 = \frac{x}{L}Mg + \frac{1}{2}mg$$

$$F_1 = \frac{L-x}{L}Mg + \frac{1}{2}mg$$