

STATICS REVIEW

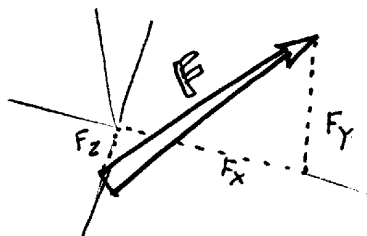


STATICS APPLIES WHEN STRUCTURES/RIGID BODIES ARE IN EQUILIBRIUM.

A **FORCE** IS A VECTOR QUANTITY, HAS A MAGNITUDE, POINT OF APPLICATION, AND A DIRECTION.

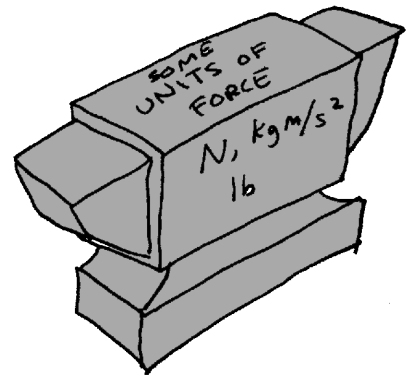


Is the force in you?



$$\mathbf{F} = F_x \mathbf{i} + F_y \mathbf{j} + F_z \mathbf{k}$$

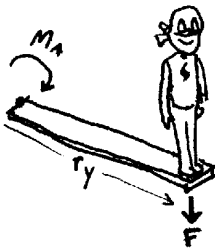
In statics, $\sum F_x = 0$
 $\sum F_y = 0$
 $\sum F_z = 0$



SOME UNITS OF FORCE

N, kg m/s²
lb

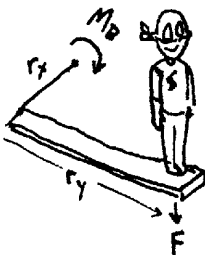
A **MOMENT** IS A CROSS PRODUCT OF A RADIUS VECTOR \mathbf{r} AND A FORCE \mathbf{F}



$$\mathbf{M} = \mathbf{r} \times \mathbf{F} \quad \mathbf{M} = M_x \mathbf{i} + M_y \mathbf{j} + M_z \mathbf{k}$$

In statics, $\sum M_x = 0$
 $\sum M_y = 0$
 $\sum M_z = 0$

$M_A = M_B$, these moments are the same!



MOMENTS ARE **VECTORS!** AND THIS **X** IS A CROSS PRODUCT - NOT MULTIPLICATION!