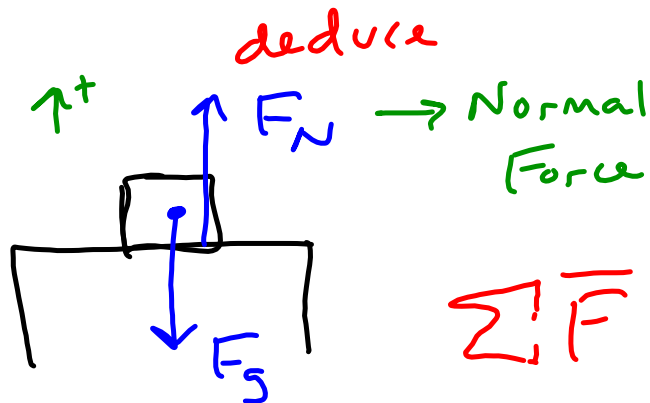
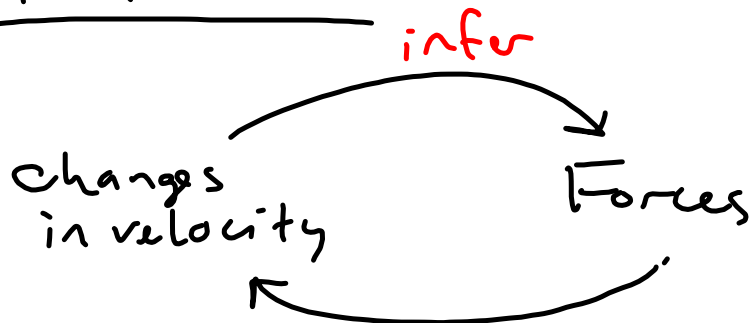


FORCES



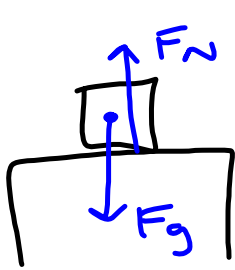
$$\sum \vec{F} = \phi$$

$$F_N - F_g = \phi$$

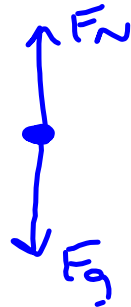
$$F_N = F_g$$

- Normal Forces:
 - Must have surface
 - Always perpendicular to the surface

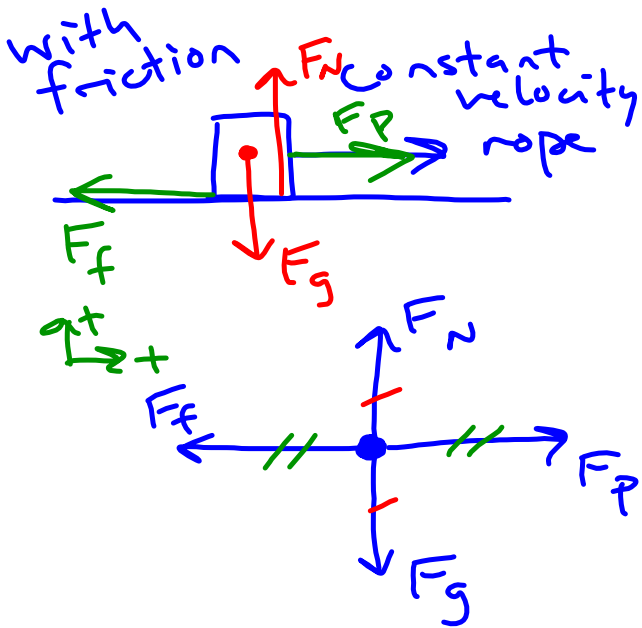
• FREE-BODY DIAGRAMS (FBDs)



Force Diagram



Free-Body Diagram



$$\sum \vec{F}_x = \emptyset$$

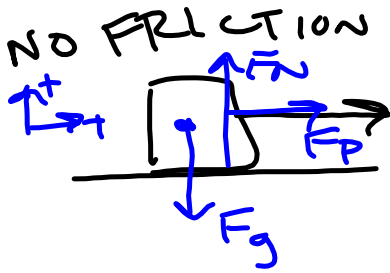
$$F_p - F_f = \emptyset$$

$$F_p = F_f$$

$$\sum \vec{F}_y = \emptyset$$

$$F_N - F_g = \emptyset$$

$$F_N = F_g$$

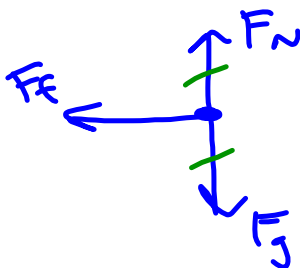
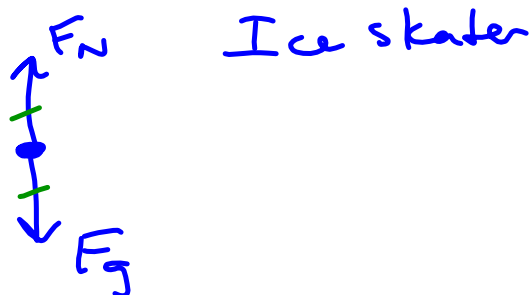
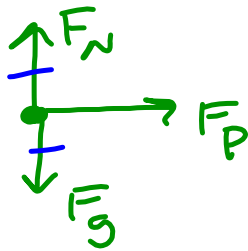


NO acceleration in y-direction

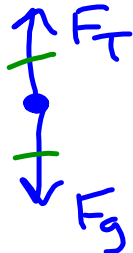
$$\sum \vec{F} = \emptyset$$

YES acceleration in x-direction

can't write equation yet...



Bucket of Water (cv)



$$\sum \vec{F} = 0$$

$$F_T - F_g = 0$$

$$F_T = F_g$$

Ropes \rightarrow

Tension Force

Skydiver (speeding up)

