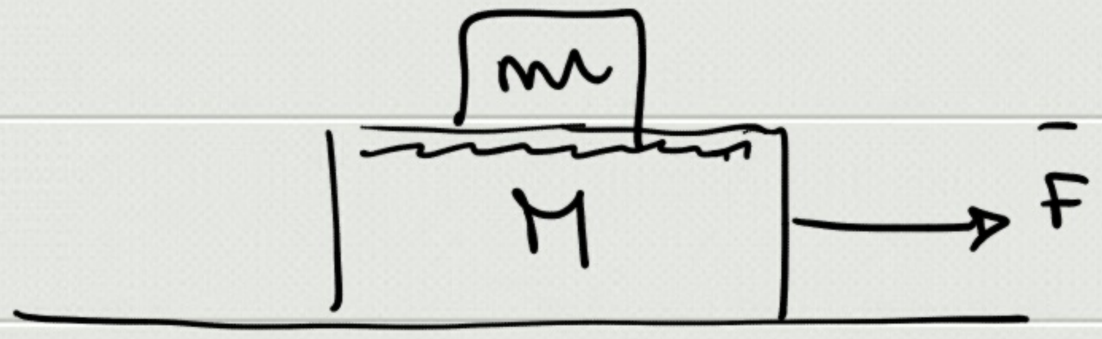


$M = 5\ kg$

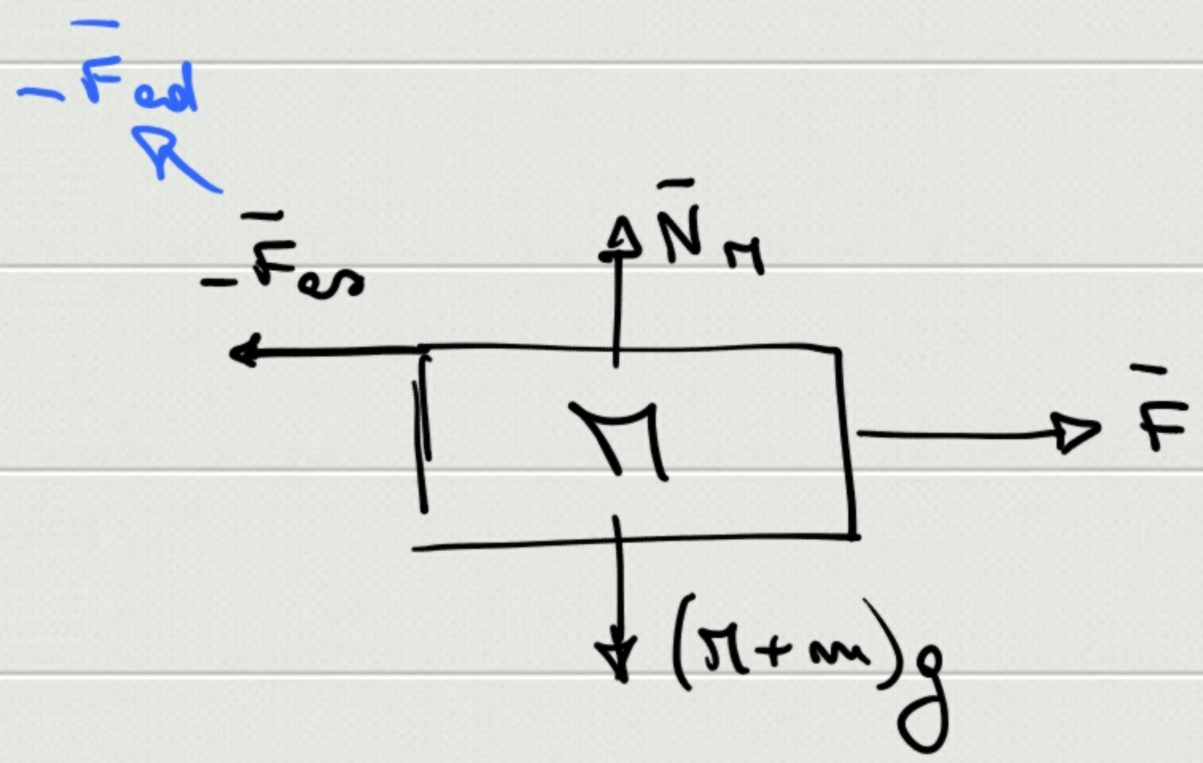
$m = 3\ kg$

$\mu_s = 0.2$

$\mu_d = 0.1$

F_{max} ; $a\ (F \le F_{max})$;

$a_m, a_M \quad (F > F_{max})$



$$\begin{cases} F_{es} = m a \\ F - F_{es} = M a \end{cases}$$

$$F = (m+M)a \Rightarrow \boxed{a = \frac{F}{m+M}}$$

$$F_{es} = m a = \frac{m}{m+M} F \le \mu_s N = \mu_s m g$$

$$F \le \underbrace{\mu_s (m+M) g}_{F_{max}} = 15.7\ N$$

$$\begin{cases} F_{ad} = m\, a_m \\ F - F_{ad} = M\, a_M \end{cases}$$

$$\bar{F}_{ad} = -\mu_d N \bar{v}_r$$

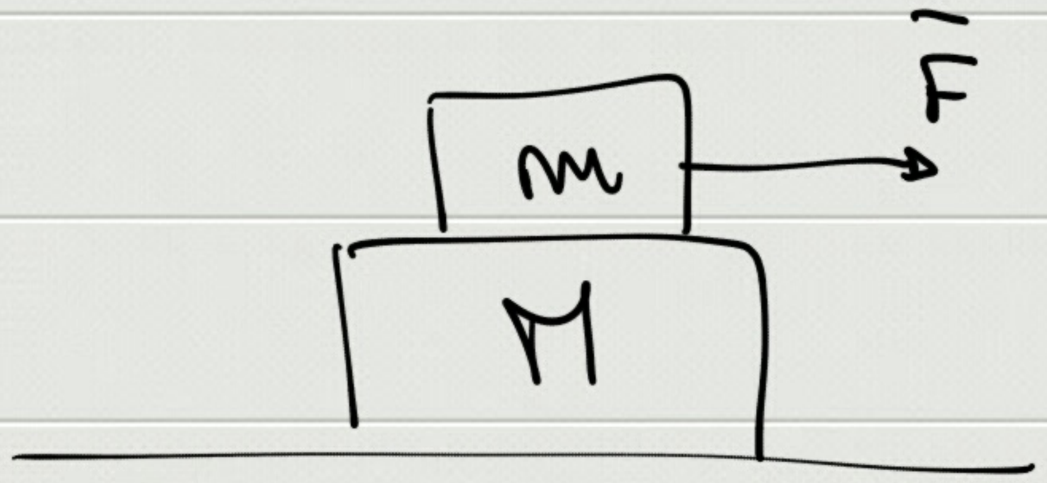
$\downarrow$

vel. rel. plano

$$\mu_d m g = m\, a_m \quad \Rightarrow \quad a_m = \mu_d g = 0.98 \ m/s^2$$

$$F - \mu_d m g = M\, a_M$$

$$\hookrightarrow \quad a_M = \frac{F - \mu_d m g}{M}$$



$a,\ F_{max}\ ,\ a_m, a_M \quad (F > F_{max})$

$$F_{max} = \mu_s g (m+M) \frac{m}{M} = 9.4\ N$$

$$a = \frac{F}{m+M}$$

$$a_M = \mu_d g \frac{m}{M} = 0.59\ m/s^2$$

$$a_m = \frac{F - \mu_d m g}{m}$$