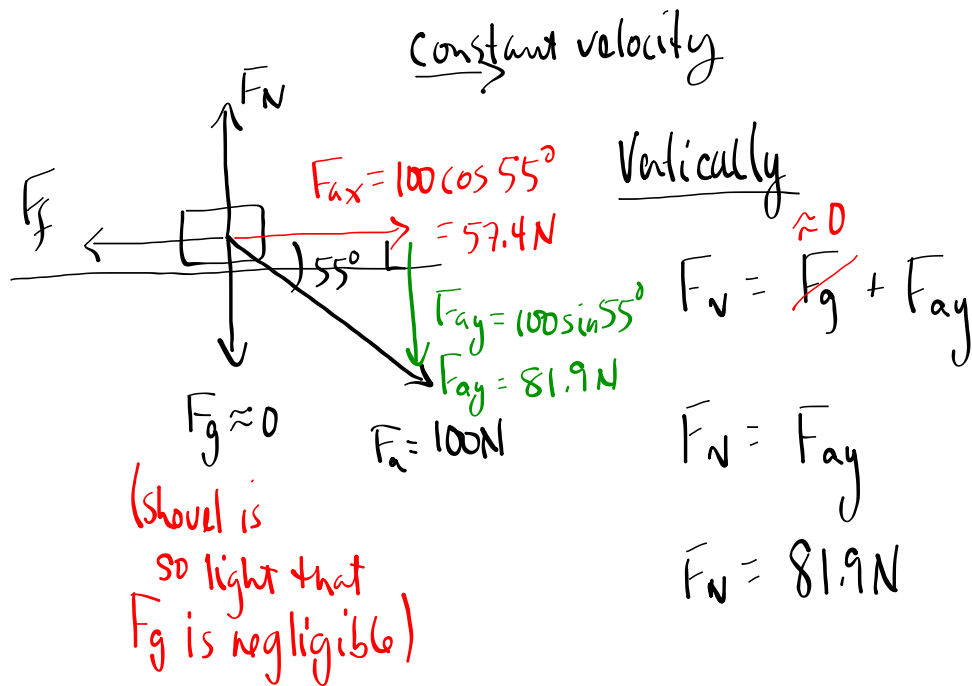


PP 1 (Forces at Angles)Horizontally

$$F_f = F_{ax}$$

$$F_f = 57.4\text{N}$$

$$F_f \approx 57\text{N}$$

$$F_f = \mu F_N$$

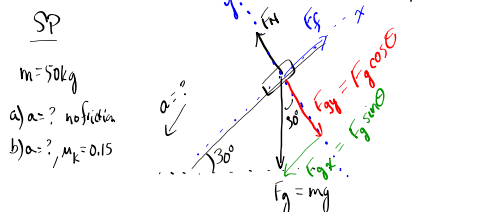
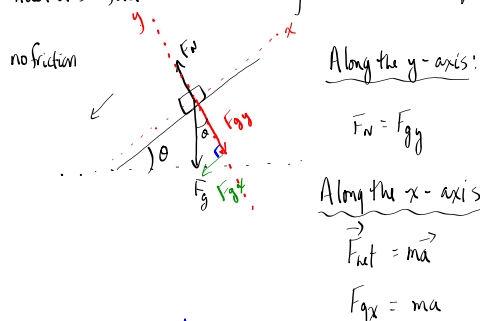
$$\mu = \frac{F_f}{F_N}$$

$$\mu = \frac{57.4\text{N}}{81.9\text{N}}$$

$$\mu = 0.70$$

Incline Problems

Consider a surface inclined at angle  $\theta$  to the horizontal.



a) Along the y-axis:  
 $a = 0$ ;  $F_N = F_{gy}$

Along the x-axis:  
 $F_{frict} = m\vec{a}$   
 $F_{gx} = ma$   
 $F_g \sin \theta = ma$   
 ~~$mg \sin \theta = ma$~~   
 $a = g \sin \theta$   
 $a = (9.8 \text{ m/s}^2) \sin 30^\circ$   
 $a = 4.9 \text{ m/s}^2$

b) with friction ( $\mu_k = 0.15$ )

Along the x-axis:  $F_{frict} = m\vec{a}$

$F_{gx} - F_f = ma$   
 $F_g \sin \theta - \mu F_N = ma$   
 $F_g \sin \theta - \mu F_{gy} = ma$   
 $F_g \sin \theta - \mu F_g \cos \theta = ma$   
 ~~$mg \sin \theta - \mu mg \cos \theta = ma$~~   
 $g \sin \theta - \mu g \cos \theta = a$   
 $(9.8 \text{ m/s}^2) \sin 30^\circ - 0.15(9.8 \text{ m/s}^2) \cos 30^\circ = a$   
 $4.905 \text{ m/s}^2 - 1.274 \text{ m/s}^2 = a$   
 $a = 3.6 \text{ m/s}^2$

TO DO

- ① Incline Sheet
- ② Finish PP/459(1+2)
- PP/463(4+5)
- PP/467