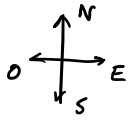
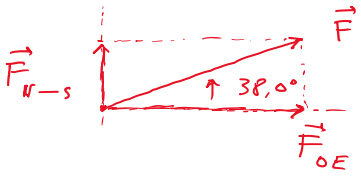
4.8

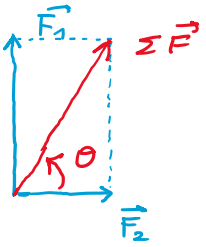




- $F_{N-S} = F \sin 38 = 720 \sin 38 = 443\ N$ direction nord
- $F_{O-E} = 720 \cos 38 = 567\ N$ direction est

4.9

(a)

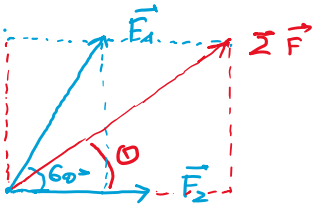


- On doit déterminer θ et $\|\Sigma\vec{F}\|$!

$\|\Sigma\vec{F}\| = \sqrt{F_1^2 + F_2^2} = \sqrt{60^2 + 40^2} \simeq 72\ N$

$\theta = \arctan\left(\frac{F_y}{F_x}\right) = \arctan\left(\frac{60}{40}\right) \simeq 56°$

(b)



- On cherche d'abord les composantes $(\Sigma\vec{F})_x$ et $(\Sigma\vec{F})_y$

$(\Sigma\vec{F})_x = (\vec{F}_1)_x + (\vec{F}_2)_x = 60 \cos 60 + 40 \simeq 70\ N$

$(\Sigma\vec{F})_y = (\vec{F}_1)_y = 60 \sin 60 \simeq 52\ N$

- $\|\Sigma\vec{F}\| = \sqrt{70^2 + 52^2} = 87\ N$
- $\theta = \arctan\left(\frac{(\Sigma\vec{F})_y}{(\Sigma\vec{F})_x}\right) = \arctan\left(\frac{52}{70}\right) = 37°$

(c) $(\Sigma\vec{F})_x = (\vec{F}_1)_x + (\vec{F}_2)_x = 100\ N$

$\theta = 0°$

4.10

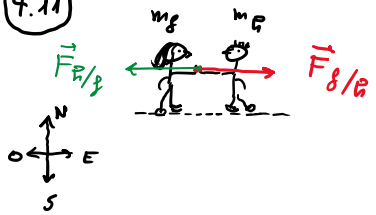
(a) $\vec{a} = \frac{\Sigma\vec{F}}{m} \Rightarrow \|\vec{a}\| = \frac{72\ N}{5\ kg} = 14\ m/s^2$ et $\theta = 56°$

(b) $\vec{a} = \frac{\Sigma\vec{F}}{m} \Rightarrow \|\vec{a}\| = \frac{87\ N}{5\ kg} = 17\ m/s^2$ et $\theta = 37°$

(c) $a = \frac{100\ N}{5\ kg} = 20\ m/s^2$ $\theta = 0°$

les directions sont les mêmes que celles des forces ! car $\vec{a} \parallel \Sigma\vec{F}$

4.11



- 3ème loi de Newton : $\vec{F}_{g/h} = -\vec{F}_{h/g}$

(a) $a_h = \frac{F_{g/G}}{m_G} = \frac{35\ N}{95\ kg} = 0{,}37\ m/s^2$ Vers l'est

(b) $a_g = \frac{F_{h/g}}{m_g} = \frac{35\ N}{52\ kg} = 0{,}67\ m/s^2$ vers l'ouest