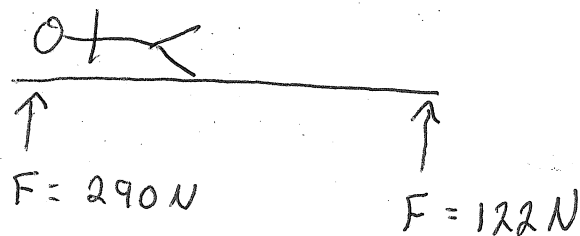
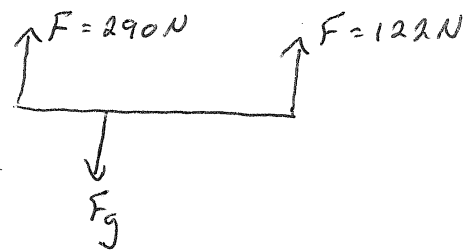
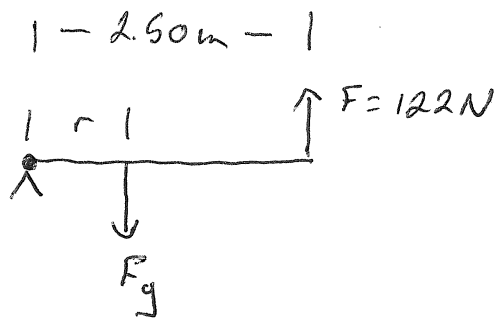


A person laying on a light weight plank supported by two scales ~~at~~ located 2.50m apart as shown below is attempting to determine center of mass.



1. Determine mass of person.
2. Determine center of mass relative to head.



$$\sum \uparrow = F_g r + FL$$

$$\sum F_y = 0 = F_{290} + F_{122} + F_g$$

$$1) \quad \Sigma F_y = 0 = 290\text{ N} + 122\text{ N} + \left[m (9.81 \text{ m/s}^2) \right]$$

$$m = 41.99 \text{ kg}$$

42.0 kg

$$2) \quad \Sigma \tau = -F_g r + FL = 0$$

$$0 = - (42.0 \text{ kg}) (9.81 \text{ m/s}^2) r + 122 \text{ N} (2.50 \text{ m})$$

$$r = 0.74 \text{ m}$$

74 cm from head