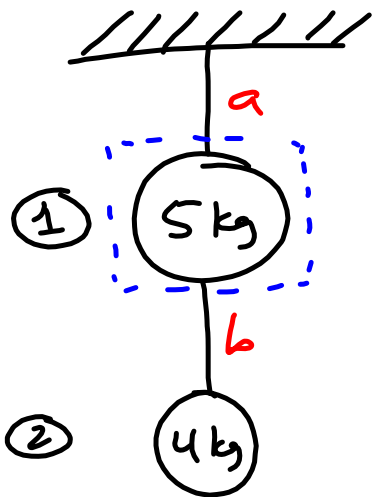


# WORKSHEET 3

2)



①

Free-body diagram for the 5 kg mass. It shows an upward force vector labeled  $F_{Ta}$ , a downward force vector labeled  $F_{g1}$ , and another downward force vector labeled  $F_{Tb}$ . A red arrow points from the text "Force pair" to the  $F_{Tb}$  vector.

$$F_{Ta} = F_{g1} + F_{Tb}$$

$$= (5\text{ kg})(9.8\text{ m/s}^2) + 39.2\text{ N}$$

$$= 88.2\text{ N}$$

②

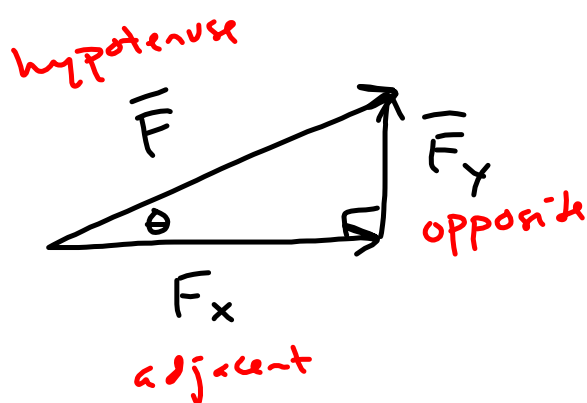
Free-body diagram for the 4 kg mass. It shows an upward force vector labeled  $F_{Tb}$  and a downward force vector labeled  $F_{g2}$ .

$$F_{Tb} = F_{g2}$$

$$= m a_g$$

$$= (4\text{ kg})(9.8\text{ m/s}^2)$$

$$= 39.2\text{ N}$$



$$\sin \theta = \frac{F_y}{F}$$

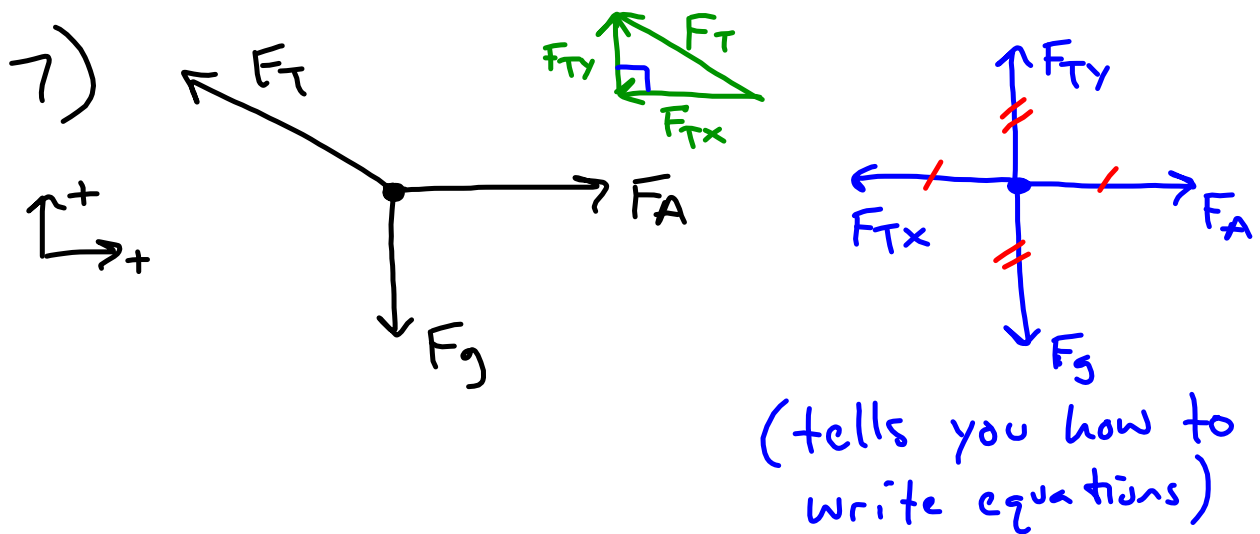
$$\cos \theta = \frac{F_x}{F}$$

$$\tan \theta = \frac{F_y}{F_x}$$

$$F^2 = F_x^2 + F_y^2$$

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$$F_g = m a_g$$



$$\sum \bar{F}_x = 0$$

$$F_A - F_{Tx} = 0$$

$$F_A = F_{Tx}$$

$$\sum \bar{F}_y = 0$$

$$F_{Ty} - F_g = 0$$

$$F_{Ty} = F_g$$