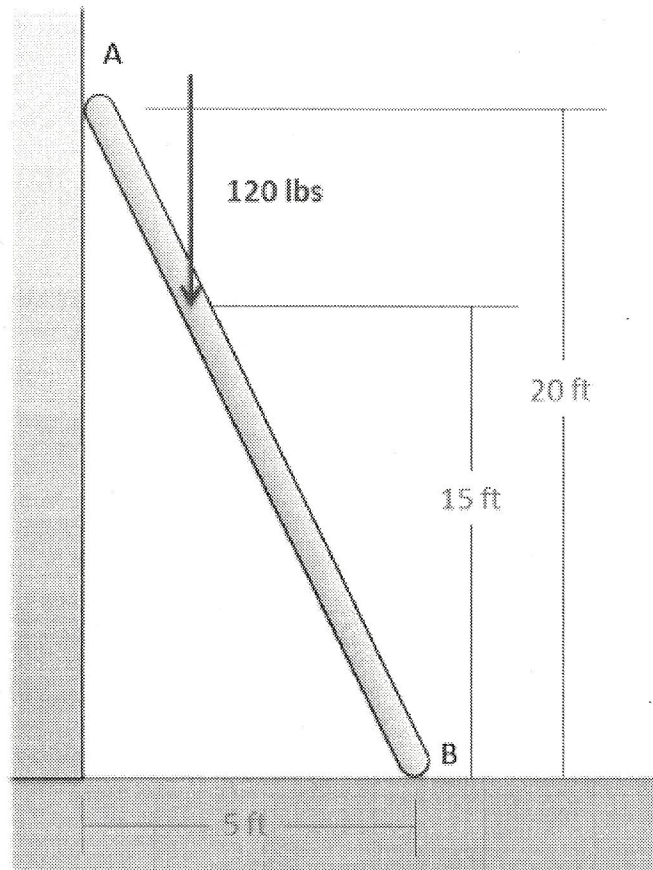
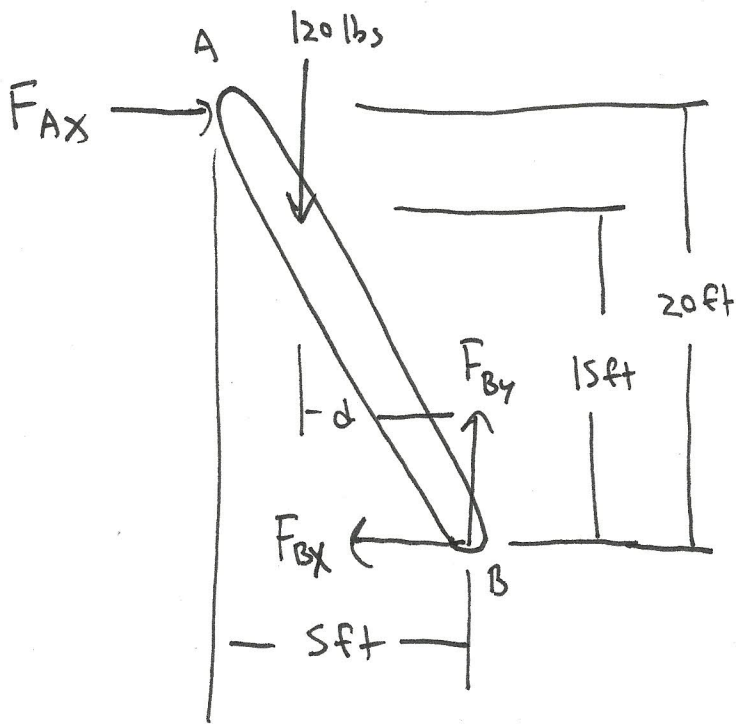


**Question 3:**

A ladder with negligible mass is supporting 120 lb person as shown below. If the contact point at A is frictionless, and the contact point at B is a rough connection, determine the forces acting at contact points A and B.





$$\sum F_x = F_{Ax} - F_{Bx} = 0$$

$$\sum F_y = F_{By} - 120 \text{ lbs} = 0$$

$$\sum M_B = (3.75)(120) - (20)(F_{Ax}) = 0$$

$$F_{By} = 120 \text{ lbs}$$

$$F_{Ax} = \frac{(3.75)(120)}{20}$$

$$F_{Ax} = 22.5 \text{ lbs}$$

$$F_{Ax} = F_{Bx}$$

$$F_{Bx} = 22.5 \text{ lbs}$$

$$d = ?$$

$$\frac{d}{5} = \frac{15}{20}$$

$$d = 3.75 \text{ ft}$$