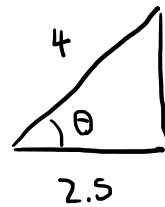
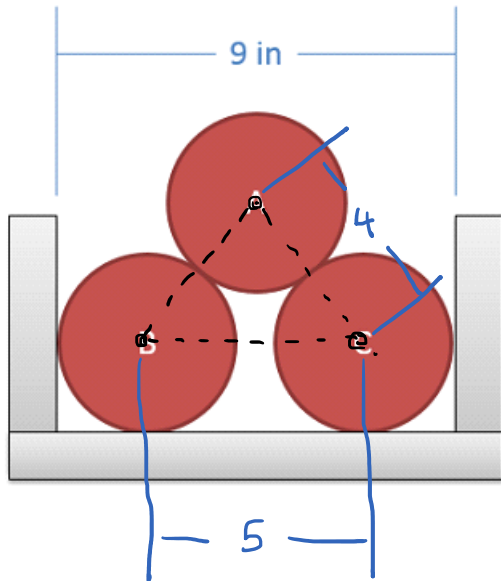


Question 6:

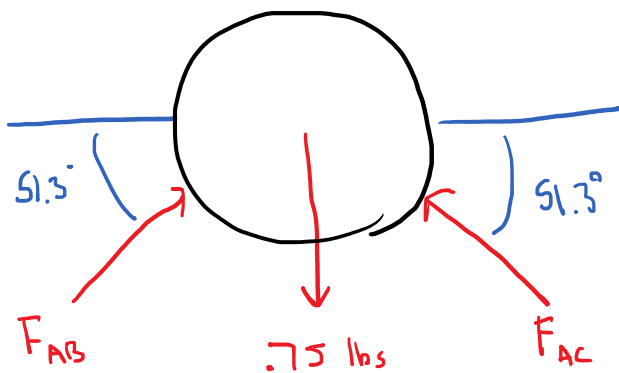
Three soda cans, each weighing .75 lbs and having a diameter of 4 inches, are stacked in a formation as shown below. Assuming no friction forces, determine the normal forces acting on can B.



$$\theta = \cos^{-1}\left(\frac{2.5}{4}\right)$$

$$\theta = 51.3^\circ$$

Calculations:



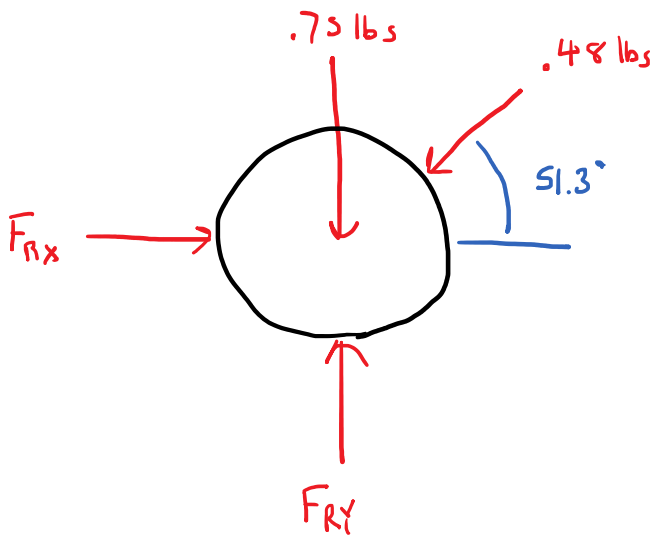
$$\sum F_x = F_{AB} \cos(51.3) - F_{AC} \cos(51.3) = 0$$

$$F_{AB} = F_{AC}$$

$$\sum F_y = F_{AB} \sin(51.3) + F_{AC} \sin(51.3)$$

$$-.75 = 0$$

$$F_{AB} = F_{AC} = .48 \text{ lbs}$$



$$\sum F_x = F_{Rx} - .48 \cos(51.3) = 0$$

$$\sum F_y = F_{Ry} - .75 - .48 \sin(51.3) = 0$$

$$F_{Rx} = .30 \text{ lbs}$$

$$F_{Ry} = 1.125 \text{ lbs}$$

Solution:

$$F_g = .75 \text{ lbs}$$

$$F_{AB} = .48 \text{ lbs}$$

$$F_{Rx} = .30 \text{ lbs}$$

$$F_{Ry} = 1.125 \text{ lbs}$$