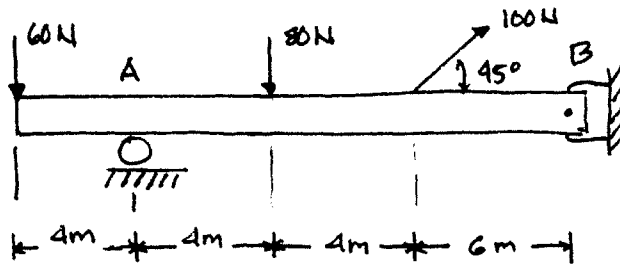


## Problem 8.3

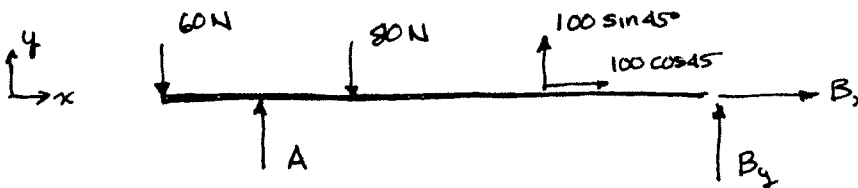
Given: A BEAM IS LOADED & SUPPORTED AS SHOWN



Find: FIND THE REACTIONS @ A & B.

Solution:

FREE BODY DIAGRAM • REMOVE ROLLER & REPLACE W/ NORMAL FORCE  
 • " PIN " " " " X & Y COMPONENTS



FOR EQUILIBRIUM

$$\rightarrow \sum F_x = 0 \Rightarrow 100 \cos 45^\circ + B_x = 0$$

$$B_x = -70 \text{ N}$$

$$\uparrow \sum F_y = 0 \Rightarrow A + B_y - 60 - 80 + 100 \sin 45^\circ = 0$$

$$A + B_y = 69.3 \quad (1)$$

$$\curvearrowright \sum M_B = 0 \Rightarrow (18)(60) + (10)(80) - (14)(A) - (6)(100 \sin 45^\circ) = 0$$

$$A = 104 \text{ N}$$

$$\text{SUB A INTO (1)} \Rightarrow B_y = -35 \text{ N}$$