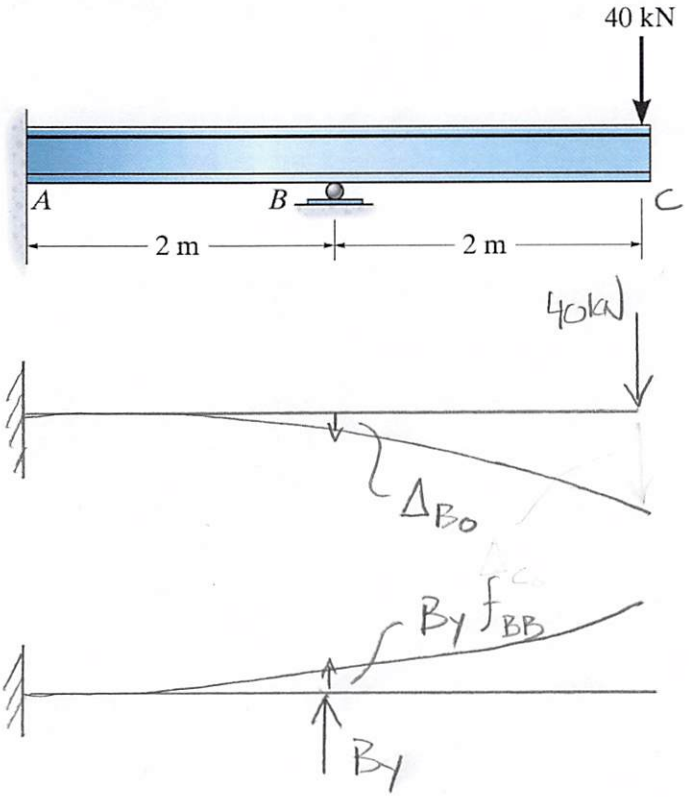
CIVL 4122 Quiz #1 F24 Name: _____

Determine the reactions at the fixed support *A* and the roller at *B*.



$$\Delta_B = 0 = \Delta_{B_o} + B_y f_{BB}$$

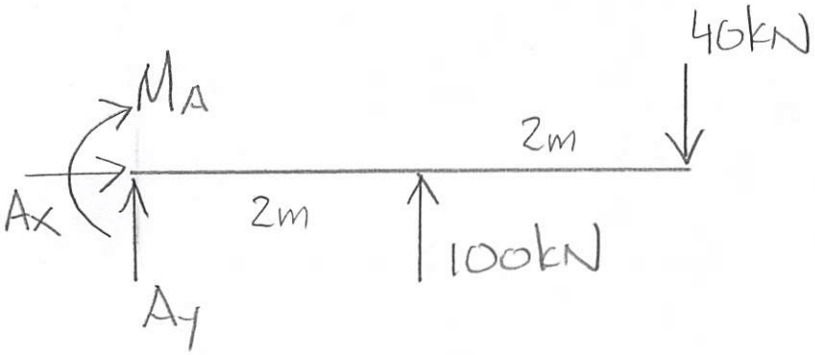
$$\Delta_{B_o} = \frac{P}{6EI}(x^3 - 3Lx^2)$$

$$= \frac{40kN}{6EI}\left[(2m)^3 - 3(4m)(2m)^2\right]$$

$$= -\frac{800kNm^3}{3EI}$$

$$f_{BB} = \frac{L^3}{3EI} = \frac{(2m)^3}{3EI} = \frac{8m^3}{3EI}$$

$$B_y = \frac{\Delta_{B_o}}{-f_{BB}} = 100kN$$



$$\circlearrowleft + \sum M_A = 0$$

$$= -M_A + 100kN(2m) - 40kN(4m)$$

$$M_A = 40kNm$$

$$\rightarrow + \sum F_x = 0 = A_x$$

$$+\uparrow \sum F_y = 0 = A_y + 100kN - 40kN$$

$$A_y = -60kN$$