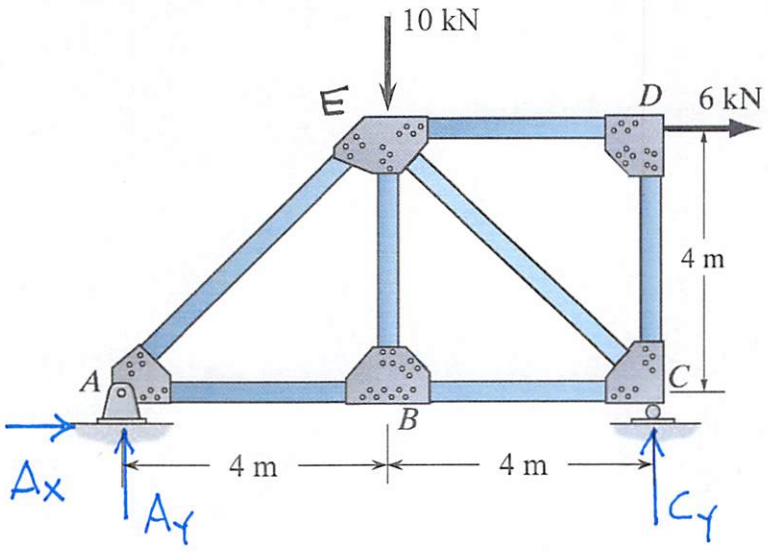
CIVL 3121 Quiz #2 S25 Name: _____

Determine all the bar forces in the truss.



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

$$= -10\text{kN}(4\text{m}) - 6\text{kN}(4\text{m}) + C_y(8\text{m})$$

$$C_y = 8\text{ kN}$$

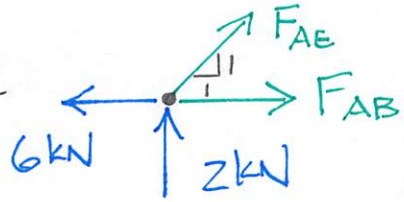
$$+\uparrow \sum F_y = 0 = A_y + C_y - 10\text{kN}$$

$$A_y = 2\text{kN}$$

$$\xrightarrow{+} \sum F_x = 0 = A_x + 6\text{kN}$$

$$A_x = -6\text{kN}$$

JOINT A



$$+\uparrow \sum F_y = 0 = \frac{1}{\sqrt{2}} F_{AE} + 2\text{kN}$$

$$F_{AE} = -2.83\text{kN}$$

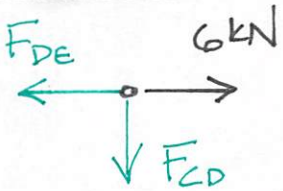
$$\xrightarrow{+} \sum F_x = 0 = F_{AB} + \frac{1}{\sqrt{2}} F_{AE} - 6\text{kN}$$

$$F_{AB} = 8\text{kN}$$

JOINT B ZERO-FORCE MEMBER

$F_{BE} = 0$ $F_{AB} = F_{BC}$

JOINT D $\xrightarrow{+} \sum F_x = 0$

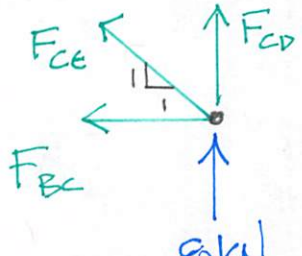


$$= -F_{DE} + 6\text{kN}$$

$$F_{DE} = 6\text{kN}$$

$$+\uparrow \sum F_y = 0 = F_{CD}$$

JOINT C $\xrightarrow{+} \sum F_x = 0$



$$= -F_{BC} - \frac{1}{\sqrt{2}} F_{CE}$$

$$F_{CE} = -11.31\text{kN}$$