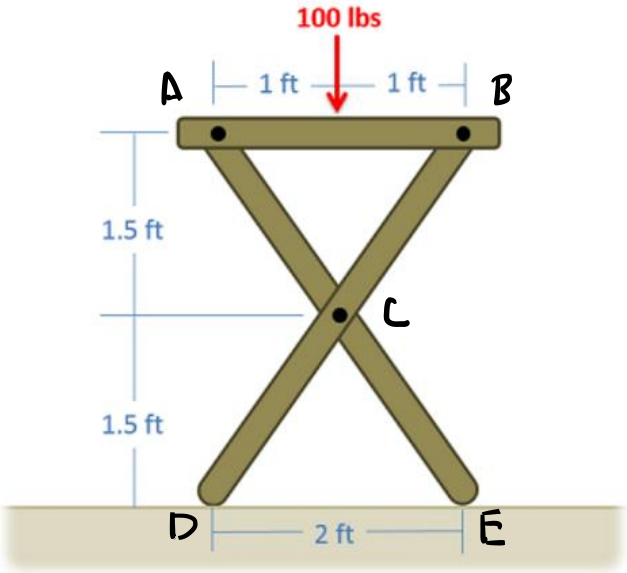
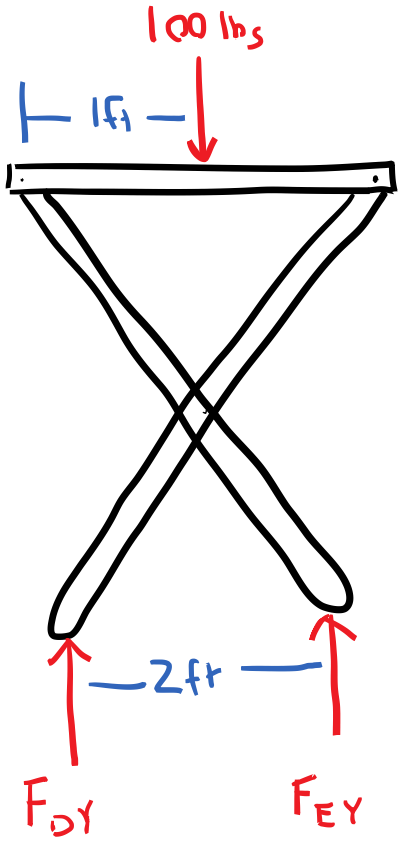
A 100 lb force is exerted on one side of a TV tray as shown below. Assuming no friction forces at the base, determine all forces acting on each of the three parts of the TV tray.





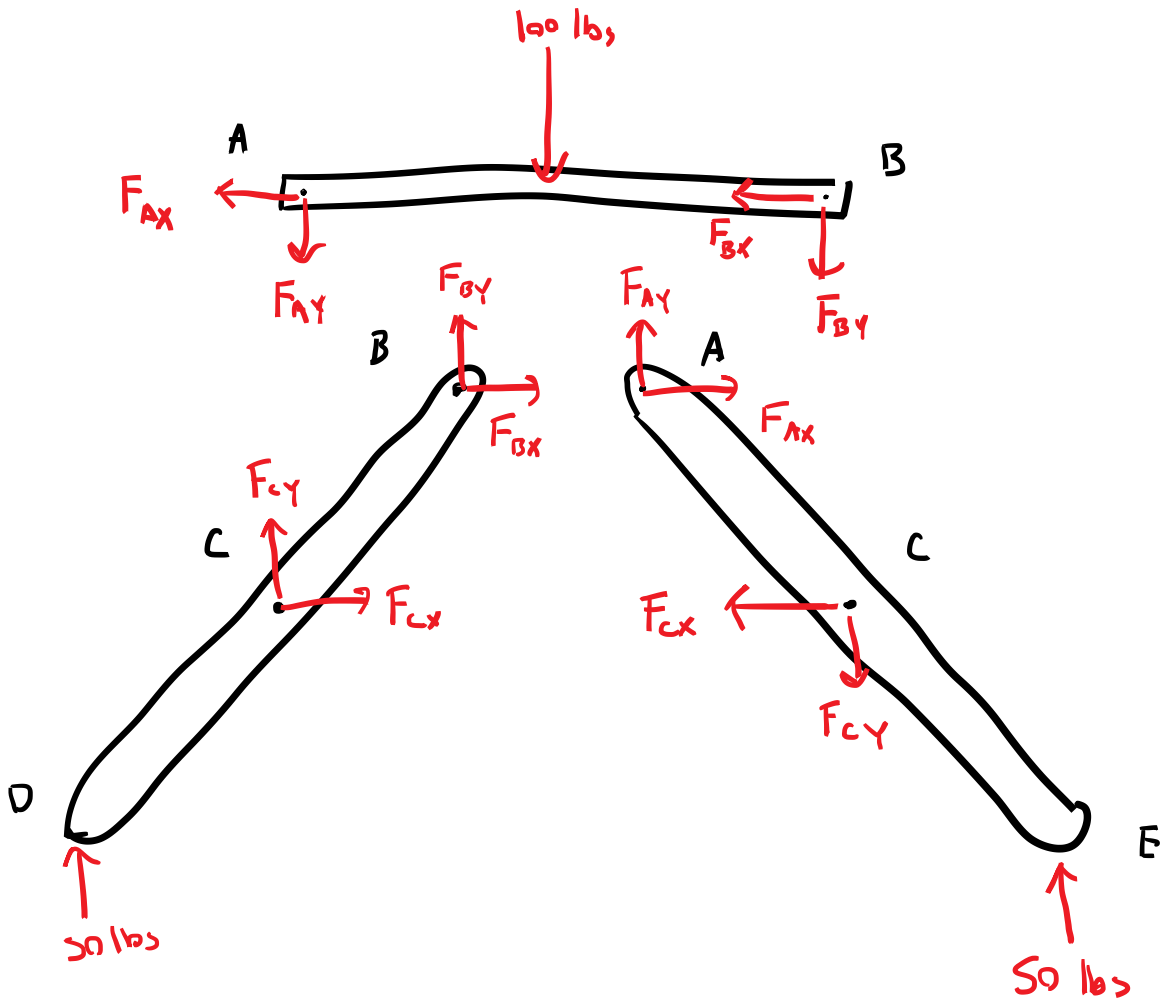
$$\sum F_x = 0$$

$$\sum F_y = F_{DY} + F_{EY} - 100 = 0$$

$$\sum M_D = (F_{EY})(2) - (100)(1) = 0$$

$$F_{EY} = 50 \text{ lbs}$$

$$F_{DY} = 50 \text{ lbs}$$



BCD

$$\Sigma F_x = F_{CX} + F_{BX} = 0$$

$$\Sigma F_y = F_{CY} + F_{BY} + 50 = 0$$

$$\Sigma M_C = -(50)(1) + (F_{BY})(1) - (F_{BX})(1.5) = 0$$

ACE

$$\Sigma F_x = -F_{CX} + F_{AX} = 0$$

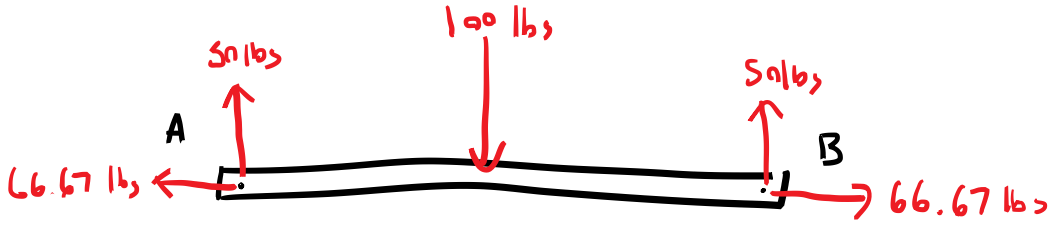
$$\Sigma F_y = F_{AY} - F_{CY} + 50 = 0$$

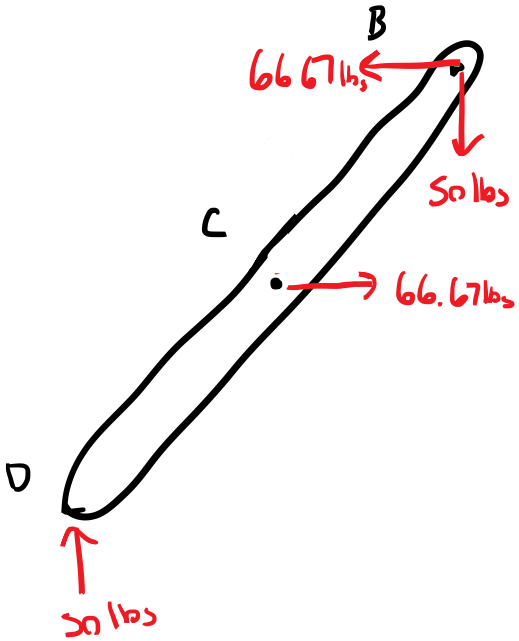
$$\Sigma M_C = (50)(1) - (F_{AY})(1) - (F_{AX})(1.5) = 0$$

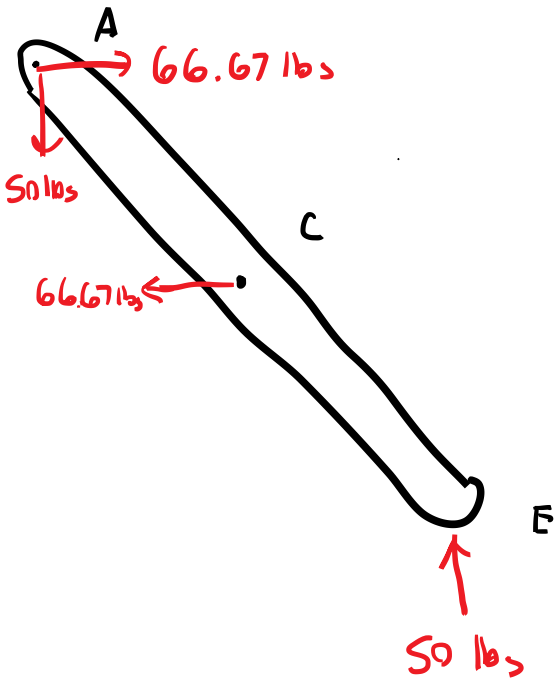
Use equation solver

$F_{AX} = 66.67$ lbs $F_{BX} = -66.67$ lbs $F_{CX} = 66.67$ lbs

$F_{AY} = -50$ lbs $F_{BY} = -50$ lbs $F_{CY} = 0$


50 lbs
100 lbs
50 lbs
A
B
66.67 lbs
66.67 lbs


B
66.67 lbs
50 lbs
C
66.67 lbs
D
50 lbs


A
66.67 lbs
50 lbs
C
66.67 lbs
E
50 lbs