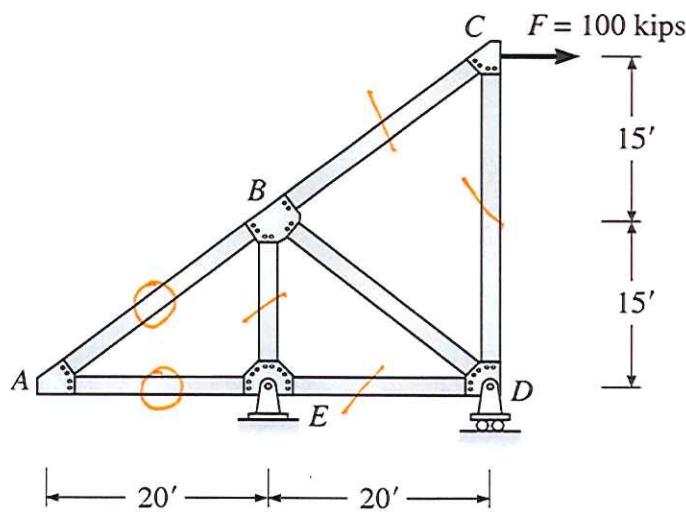


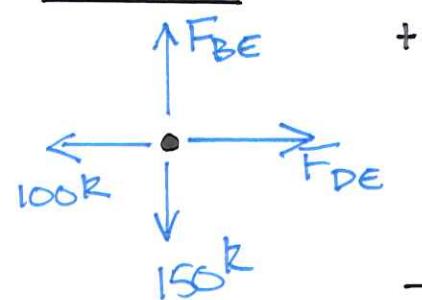
Example 3-3. Determine all the forces in the following truss.



$$\underline{\text{CASE 1}} \quad \bar{F}_{AB} = \bar{F}_{AE} = 0$$

$$\begin{aligned} & \stackrel{\leftarrow}{\sum M_E} = 0 \\ & = D_y(20') - 100^k(30') \\ & \underline{D_y = 150^k} \\ & + \uparrow \sum F_y = 0 = D_y + E_y \\ & \underline{E_y = -D_y = -150^k} \\ & + \rightarrow \sum F_x = 0 = E_x + 100^k \\ & \underline{E_x = -100^k} \end{aligned}$$

Joint E



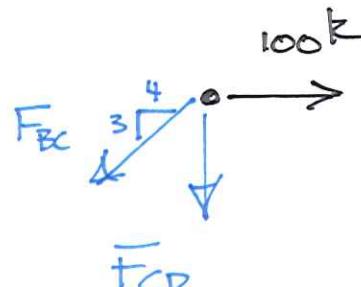
$$+ \uparrow \sum F_y = 0 = F_{BE} - 150^k$$

$$\underline{F_{BE} = 150^k}$$

$$+ \rightarrow \sum F_x = 0 = F_{DE} - 100^k$$

$$\underline{F_{DE} = 100^k}$$

Joint C



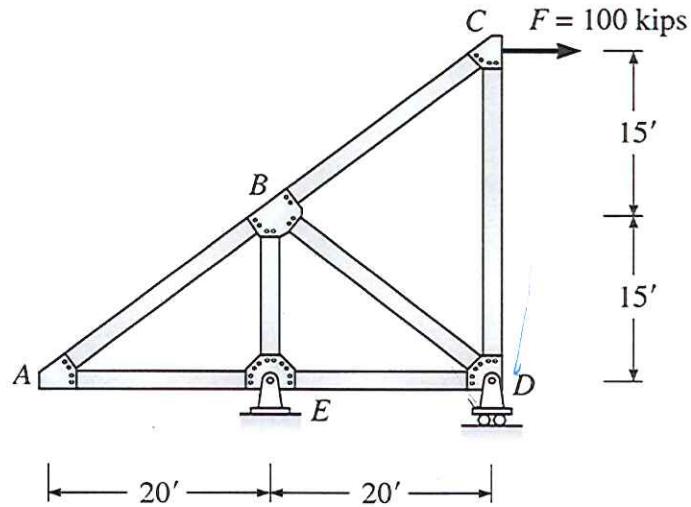
$$+ \rightarrow \sum F_x = 0 = -\frac{4}{5}F_{BC} + 100^k$$

$$\underline{F_{BC} = 125^k}$$

$$+ \uparrow \sum F_y = 0 = -\frac{3}{5}F_{BC} - F_{CD}$$

$$\underline{F_{CD} = -75^k}$$

Example 3-3. Determine all the forces in the following truss.



J O I N T D

Free body diagram of joint D showing force components  $F_{BD}$ ,  $F_{CD}$ ,  $F_{DE}$ , and a reaction force of 150k.

$$\sum F_x = 0 = -F_{DE} - \frac{4}{5}F_{BD}$$
$$F_{BD} = -125\text{k}$$