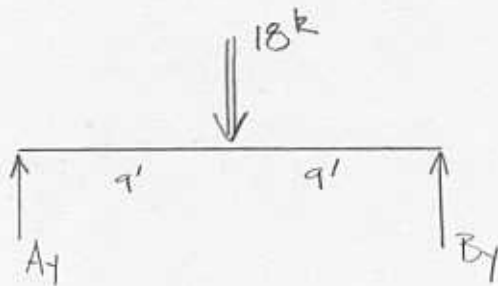
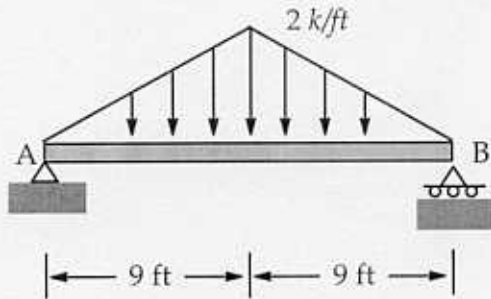


Work any two (2) of the following problems ***** SHOW ALL WORK *****

1. Find the reactions at the supports for the beam shown below.



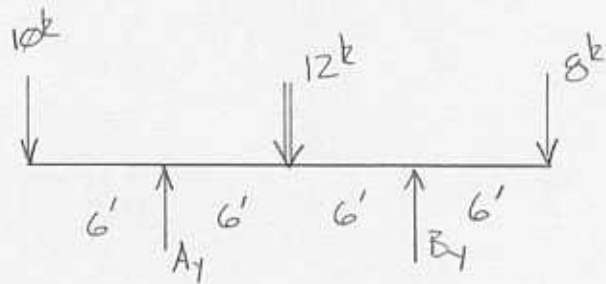
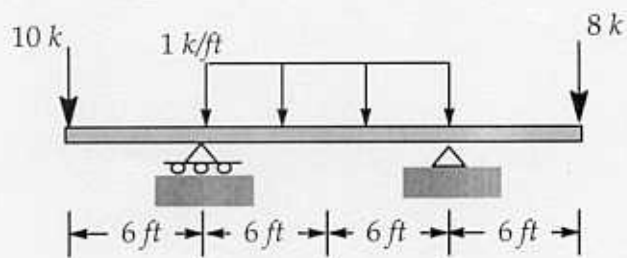
$$\sum M_A = 0 = -18k(9') + B_y(18')$$

$$\underline{\underline{B_y = 9k}}$$

$$\sum F_y = 0 = A_y + B_y - 18k$$

$$\underline{\underline{A_y = 9k}}$$

2. Find the reactions at the supports for the beam shown below.



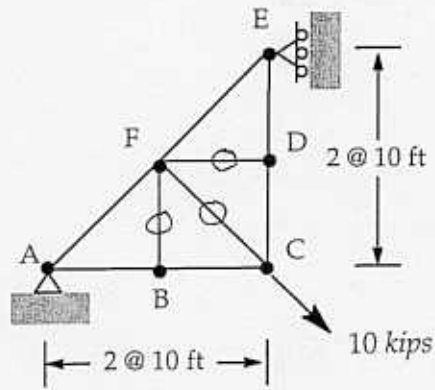
$$\sum M_A = 0 = 10^k(6') - 12^k(6') + B_y(12') - 8^k(18')$$

$$\underline{\underline{B_y = 13^k}}$$

$$\sum F_y = 0 = A_y + B_y - 10^k - 12^k - 8^k$$

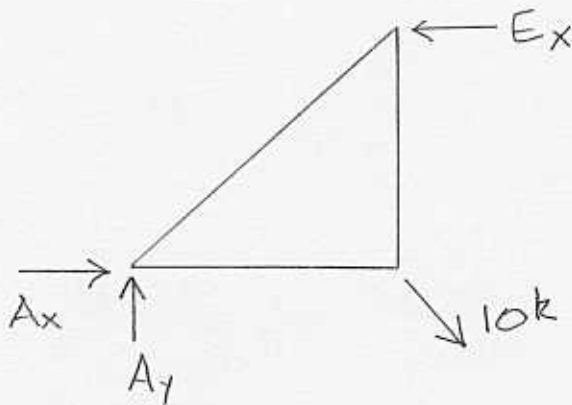
$$\underline{\underline{A_y = 17^k}}$$

3. Determine the forces in all the truss members.



ZERO FORCE MEMBERS

$$\underline{F_{DF} = F_{BF} = F_{CF} = 0}$$

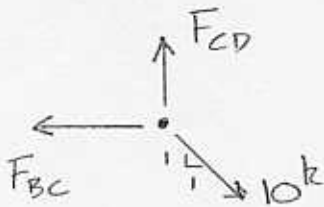


$$F_{AF} = F_{CF}$$

$$F_{CD} = F_{DE}$$

$$F_{AB} = F_{BC}$$

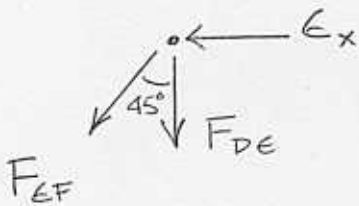
JOINT C



$$\sum F_x = 0 = -F_{BC} + 10^k \sin 45^\circ \quad \underline{F_{BC} = 7.07^k}$$

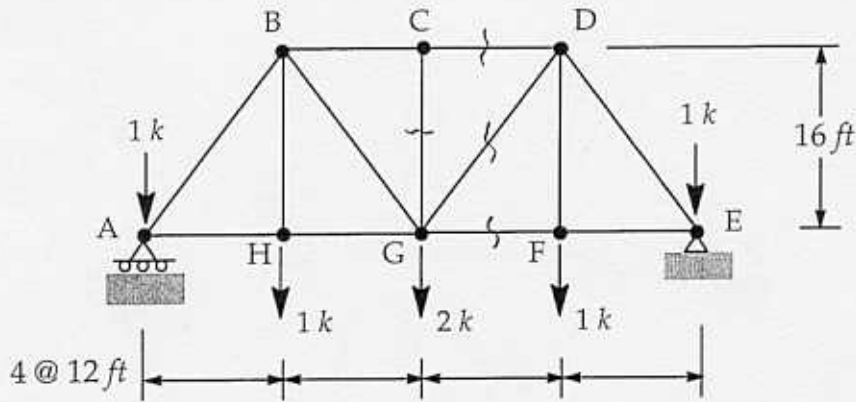
$$\sum F_y = 0 = F_{CD} - 10^k \cos 45^\circ \quad \underline{F_{CD} = 7.07^k}$$

JOINT E

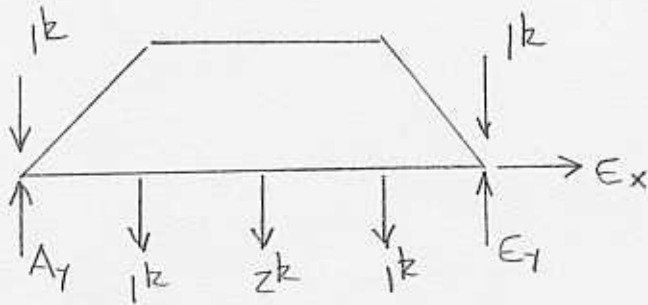


$$\sum F_y = 0 = -F_{DE} - F_{EF} \cos 45^\circ \quad \underline{F_{EF} = -10^k}$$

4. Determine the force in the member CD, CG, DG, and GF of the truss shown below.



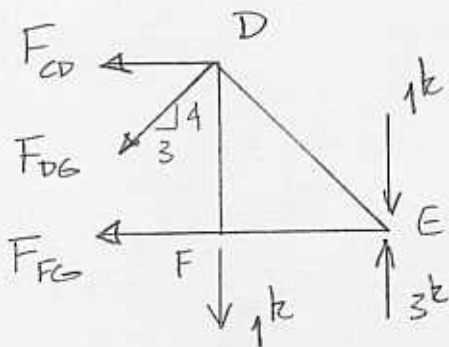
ZERO FORCE MEMBER $F_{CG} = 0$



$$\sum M_A = 0 = -1k(12ft) - 2k(24ft) - 1k(36ft) - 1k(48ft) + E_y(48ft)$$

$$\underline{E_y = 3k}$$

$$\sum F_x = 0 = E_x$$



$$\sum M_D = 0 = -F_{FG}(16ft) - 1k(12ft) + 3k(12ft)$$

$$\underline{F_{FG} = 1.5k}$$

$$\sum M_G = 0 = F_{CD}(16ft) - 1k(12ft) - 1k(24ft) + 3k(24ft)$$

$$\underline{F_{CD} = -2.25k}$$

$$\sum F_y = 0 = -1k - 1k + 3k - \frac{4}{5}F_{DG}$$

$$\underline{F_{DG} = 1.25k}$$