

Solutions: 21-5-5.7-MK-05

$$W_a = 10,000$$

$$W_b = 7500$$

$$W_c = 5000$$

$$\sum F_z = 0 = D + E + F - 10,000 - 7500 - 5000 = 0$$

$$\sum F_z = 0 = D + E + F - 22,500$$

$$\sum M_y = 0 = E(15ft) - (5000)(16)(10ft) + (7500)(16)(7ft) - D(15ft)$$

$$\sum M_y = 0 = 15E - 15D + 2500$$

$$\sum M_y = 0 = (7500)(4) + (5000)(4) + (10,000)(7) - F(27)$$

$$0 = 120,000 - F(27) \rightarrow F = \frac{120,000}{27} \rightarrow F = 4444.4$$

$$\sum F_z = 0 = D + E + 4444.4 - 22,500$$

$$D + E = 18055.6 \rightarrow D = 18055.6 - E$$

$$\sum M_x = 0 = 15E - 15(18055.6 - E) + 2500$$

$$30E = 270834 - 2500$$

$$E = \frac{268334}{30} \rightarrow E = 8944.5$$

$$D = 18055.6 - 8944.5 = 9111.1$$