

# PROBLEM 1.9

Eq. 1.8 is used in both parts:  $n = m/M$ , where  $M$  is from Tables A-1.

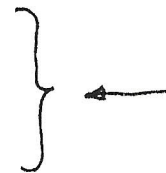
(a)  $m = Mn$ , where  $n = 20 \text{ kmol}$ .

$$\text{Air: } m = (28.97 \text{ kg/kmol})(20 \text{ kmol}) = 579.4 \text{ kg}$$

$$\text{C: } m = (12.01 \text{ kg/kmol})(20 \text{ kmol}) = 240.2 \text{ kg}$$

$$\text{H}_2\text{O: } m = (18.02 \text{ kg/kmol})(20 \text{ kmol}) = 360.4 \text{ kg}$$

$$\text{CO}_2: m = (44.01 \text{ kg/kmol})(20 \text{ kmol}) = 880.2 \text{ kg}$$



(b)  $n = m/M$ , where  $m = 50 \text{ lb}$ .

$$\text{H}_2: n = (50 \text{ lb}) / (2.016 \text{ lb/lbmol}) = 24.802 \text{ lbmol}$$

$$\text{N}_2: n = (50 \text{ lb}) / (28.01 \text{ lb/lbmol}) = 1.785 \text{ lbmol}$$

$$\text{NH}_3: n = (50 \text{ lb}) / (17.03 \text{ lb/lbmol}) = 2.936 \text{ lbmol}$$

$$\text{C}_3\text{H}_8: n = (50 \text{ lb}) / (44.09 \text{ lb/lbmol}) = 1.134 \text{ lbmol}$$

