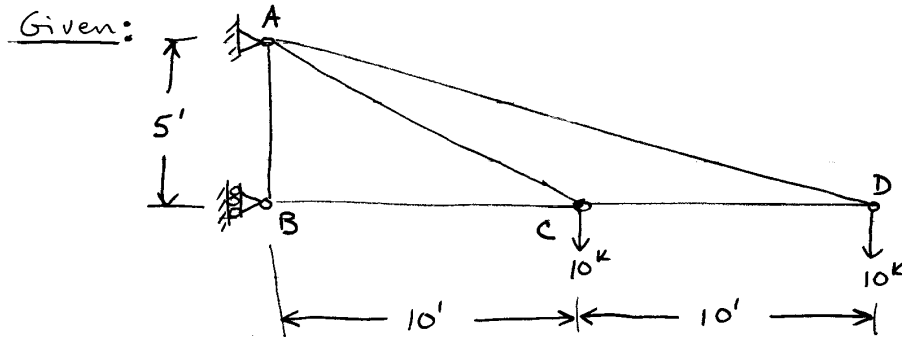


Example Illustrating Factor of Safety



Test on $\frac{3}{4}$ " rod of same material as rods AC and AD had an ultimate load of 29k.

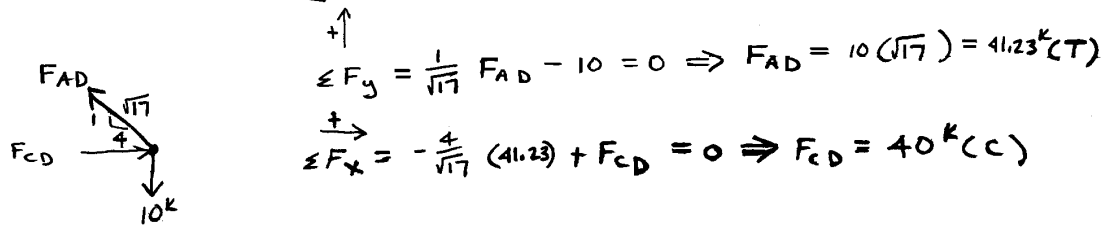
Required: For F.S. = 3.0, determine the required diameter of (a) rod AC ; (b) rod AD.

Assumptions: None

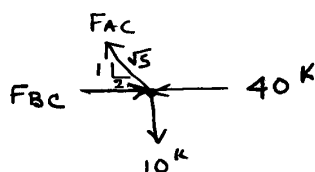
Solution: $\sigma_u = \frac{P_u}{A} =$

$$\sigma_{all} = \frac{\sigma_u}{F.S.} =$$

FBD - Pin D



FBD - Pin C



$$\sum F_y = \frac{1}{\sqrt{5}} F_{AC} - 10 = 0 \Rightarrow F_{AC} = 22.36^k (T)$$

This is all we need.

(a) Diameter of rod AC

$$\sigma_{\text{all}} = \frac{F_{AC}}{A} =$$

$$d_{AC} =$$

(b) Diameter of rod AD

$$d_{AD} =$$

Summary of Answers

a) $d_{\text{req'd}} (\text{rod AC}) =$

b) $d_{\text{req'd}} (\text{rod AD}) =$