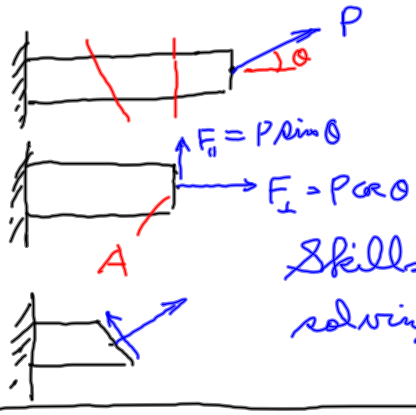
Mechanics of materials: a course of study regarding the description & prediction of conditions of elastic bodies under the action of balanced force system.

Stress: force per unit area

Normal stress: stress ⊥ to the surface, σ (sigma)

Shearing stress: stress // to the surface, τ (tau)

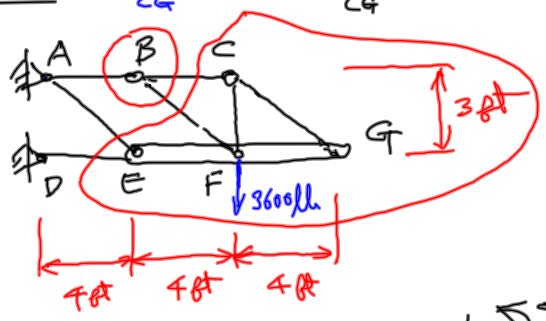


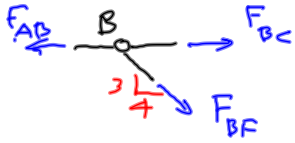
$$\sigma = \frac{P\cos\theta}{A}$$

$$\tau = \frac{P\sin\theta}{A}$$

Skills in statics needed in solving problems in MoM.

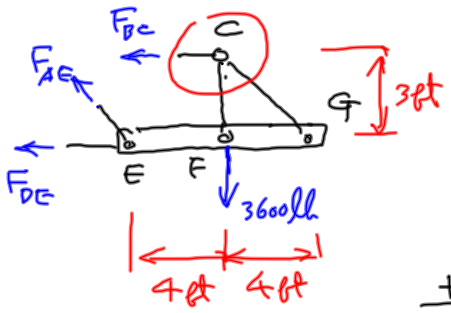
1.11 $\sigma_{CG} = ?$ $d_{CG} = 0.75$ in.





$+\uparrow \Sigma F_y = 0$:

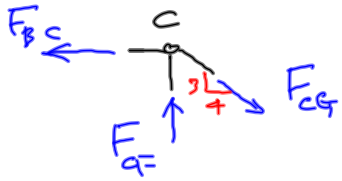
$-\frac{3}{5}F_{BF} = 0 \quad \therefore F_{BF} = 0$



$+\circlearrowleft \Sigma M_E = 0$:

$3F_{BC} - 4(3600) = 0$

$\therefore F_{BC} = \boxed{}$



$\xrightarrow{+} \Sigma F_x = 0$:

$\frac{4}{5}F_{CG} - F_{BC} = 0$

$\therefore F_{CG} = \boxed{}$

$$\sigma_{CG} = \frac{F_{CG}}{A_{CG}} = \frac{\boxed{}}{\pi\left(\frac{0.75}{2}\right)^2} = \boxed{}$$

$$\boxed{\sigma_{CG} = \boxed{}\ \text{lb/in.}}$$