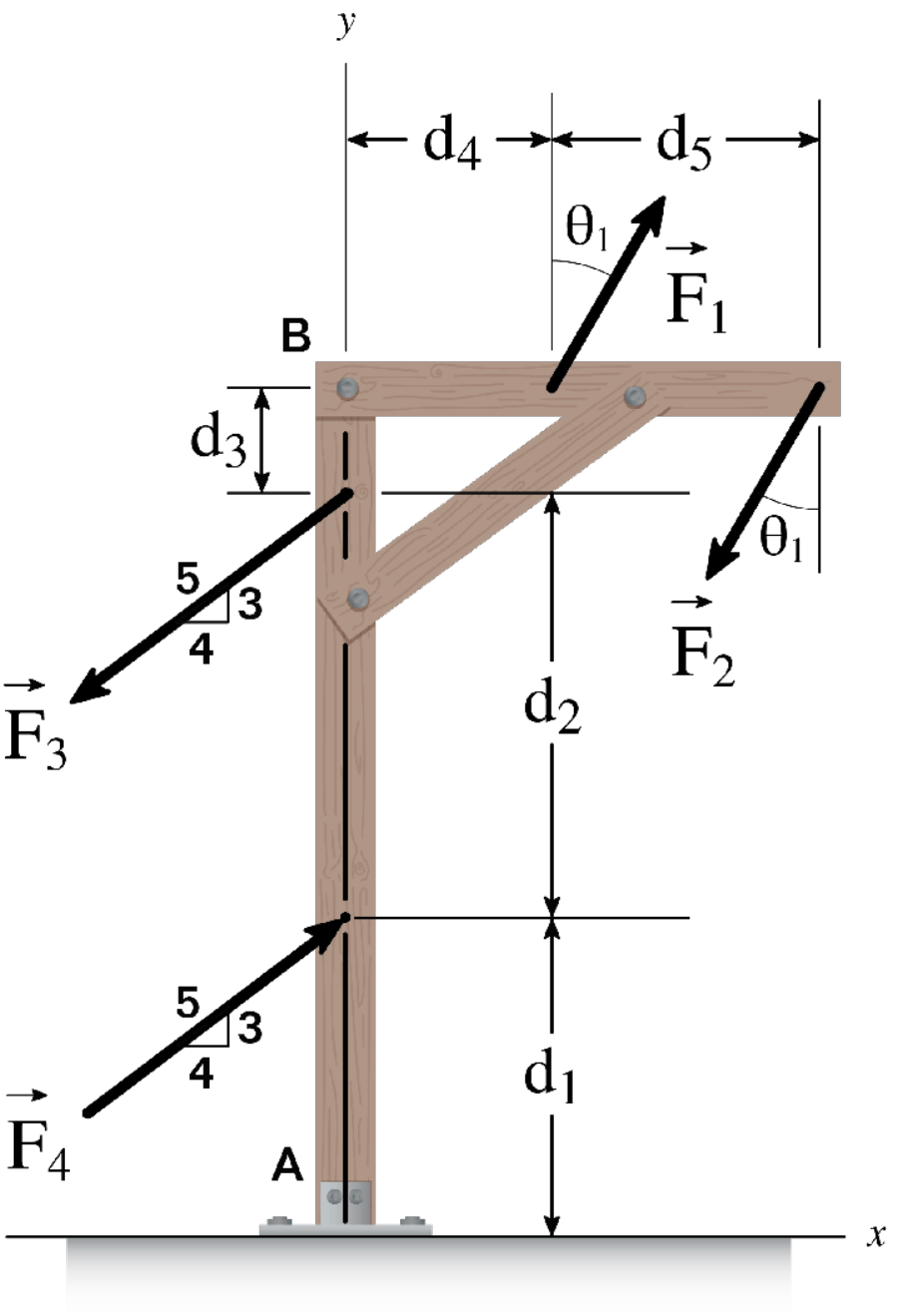

A wooden frame supports 2 pairs of coupled forces. If $\vec{F}_1$ and $\vec{F}_2$ have a magnitude of F, and the frame experiences a resultant couple moment of M_R counterclockwise, find the magnitudes of $\vec{F}_3$ and $\vec{F}_4$.

Since $\vec{F_3}$ and $\vec{F_4}$ are coupled forces, they have the same magnitude.

Assuming counterclockwise rotation is positive:

$$M_R = d_2 \cdot \frac{4}{5} F_3 - d_5 \cdot F \cos\theta_1$$

$$\Rightarrow F_3 = F_4 = \frac{M_R + d_5 \cdot F \cos\theta}{\frac{4}{5} \cdot d_2}$$