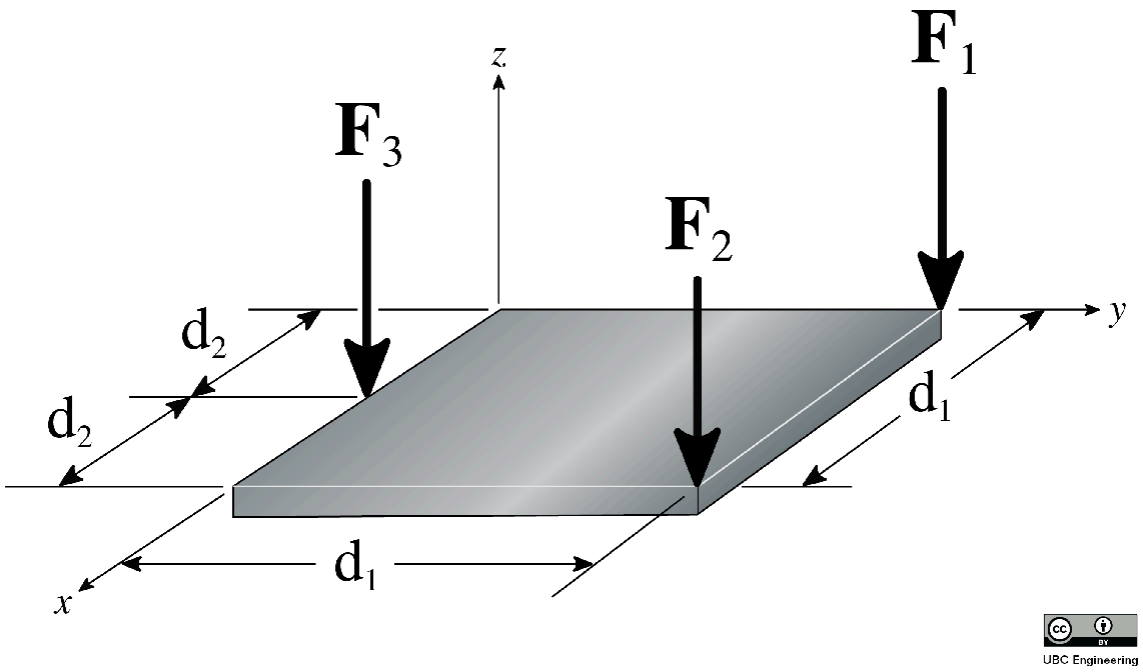

A slab experiences three forces $\vec{F_1}$, $\vec{F_2}$, and $\vec{F_3}$ acting vertically with magnitudes F_1, F_2, and F_3 respectively. Determine the resultant force and identify where it acts on the x-y plane (coordinates).

Since all forces act downward:

$$F_R = \Sigma F = F_1 + F_2 + F_3$$

$$F_R \cdot \bar{x} = \Sigma(F \cdot x)$$

$$\rightarrow \bar{x} = \frac{d_1 F_2 + d_2 F_3}{F_R}$$

$$\Rightarrow \bar{x} = \frac{d_1}{F_R} \cdot \left(F_2 + \frac{F_3}{2}\right)$$

$$F_R \cdot \bar{y} = \Sigma(F \cdot y)$$

$$\rightarrow \bar{y} = \frac{d_1(F_1 + F_2)}{F_R}$$

$$\Rightarrow \bar{y} = \frac{d_1}{F_R} \cdot (F_1 + F_2)$$