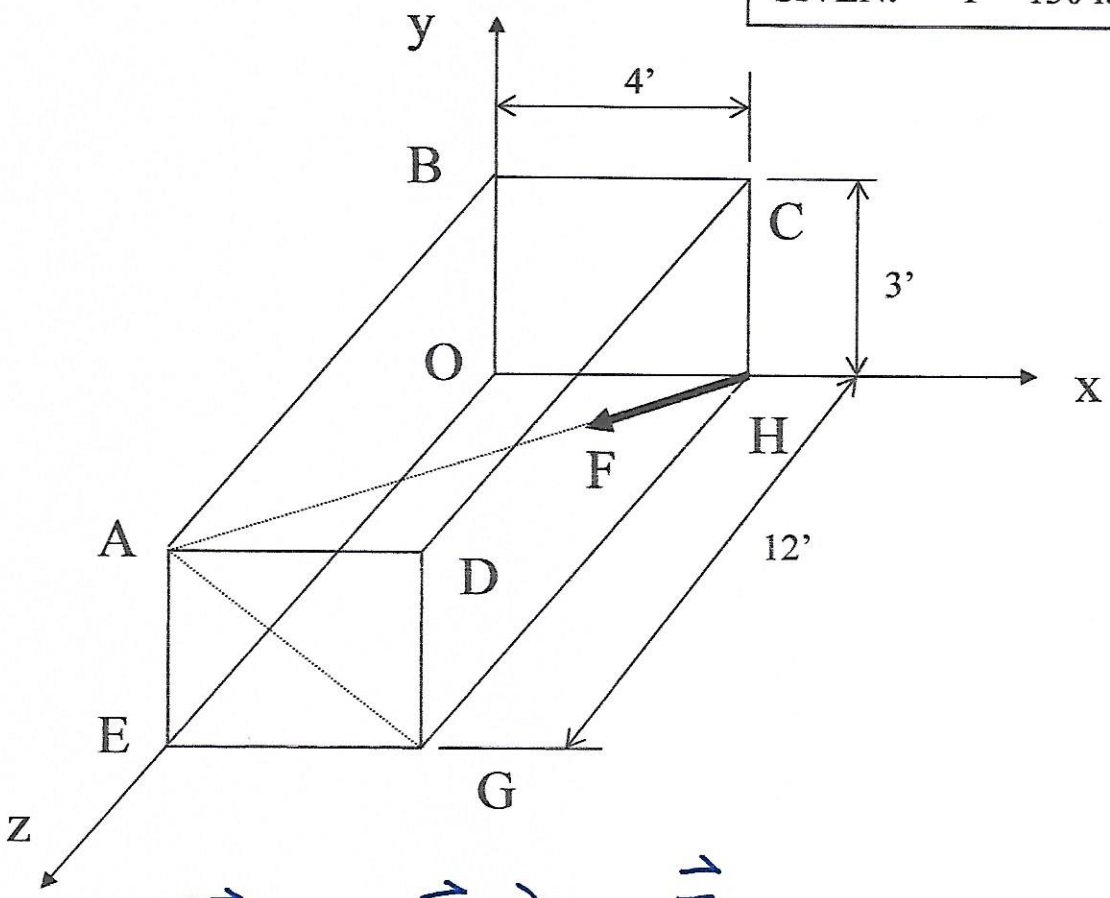
## 3D Moment Example

Determine the moment of **F** about point **B.**

GIVEN: F = 130 lbs




$\vec{M}_B = (\vec{r}_{BA} \text{ or } \vec{r}_{BH}) \times \vec{F}$

$\vec{r}_{BA} = [0\ 0\ 12]$ $\quad \vec{r}_{BH} = [4\ -3\ 0]$

$\vec{F} = F\,\vec{u}_{HA}$ $\quad \vec{HA} = [-4\ 3\ 12]$

$|\vec{HA}| = \sqrt{-4^2+3^2+12^2} = 13$

$\vec{u}_{HA} = \left[-\frac{4}{13}\ \frac{3}{13}\ \frac{12}{13}\right]$

$\vec{F} = 130\left[-\frac{4}{13}\ \frac{3}{13}\ \frac{12}{13}\right] = [-40\ 30\ 120]$

$\vec{M}_B = [0\ 0\ 12] \times [-40\ 30\ 120] = [-360\ -480\ 0]$ FT·lbs ABOUT B

$\vec{M}_B = [4\ -3\ 0] \times [-40\ 30\ 120] =$ SAME ANSWER!