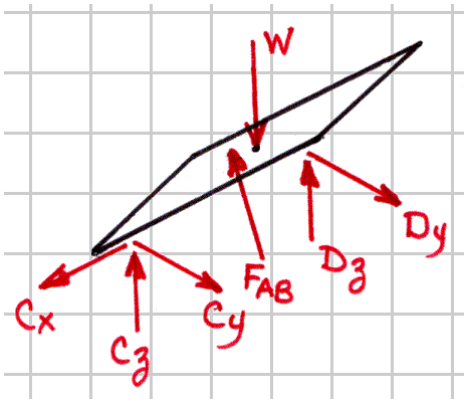
1-32*



ABC is an equilateral triangle with a height of $h = 950\sin 60° = 822.724$ mm, and

$$\mathbf{W} = -60(9.81)\mathbf{k} = -588.60\mathbf{k}\ \text{N}$$

$$\mathbf{F}_{AB} = F_{AB}\frac{-475\mathbf{j}+822.724\mathbf{k}}{950}$$
$$= -0.50000F_{AB}\mathbf{j}+0.86603F_{AB}\mathbf{k}$$

Moment equilibrium about *C*

$$\Sigma\mathbf{M}_C = \mathbf{0}: \quad (-0.95\mathbf{i})\times(B_y\mathbf{j}+B_z\mathbf{k})$$
$$(0.95\mathbf{j})\times(-0.50000F_{AB}\mathbf{j}+0.86603F_{AB}\mathbf{k})$$
$$+(-0.475\mathbf{i}+0.23750\mathbf{j}+0.411362\mathbf{k})\times(-588.6\mathbf{k}) = \mathbf{0}$$

has components

x: $0.82272F_{AB} - 139.7925 = 0$

y: $0.95B_z - 279.585 = 0$

z: $0 - 0.95B_y = 0$

$F_{AB} = 169.915\ \text{N} \cong 169.9\ \text{N (C)}$ ..... **Ans.**

$B_y = 0\ \text{N}$ ..... **Ans.**

$B_z = 294.300\ \text{N} \cong 294\ \text{N}$ ..... **Ans.**

Then the *x*-, *y*-, and *z*-components of the force equilibrium equation give

x: $C_x = 0$

y: $C_y + (0) - 0.5(169.915) = 0$

z: $294.300 + C_z - 588.6 + 0.86603(169.915) = 0$

$C_x = 0\ \text{N}$ ..... **Ans.**

$C_y = 84.958\ \text{N} \cong 85.0\ \text{N}$ ..... **Ans.**

$C_z = 147.15\ \text{N} \cong 147.2\ \text{N}$ ..... **Ans.**