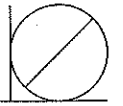
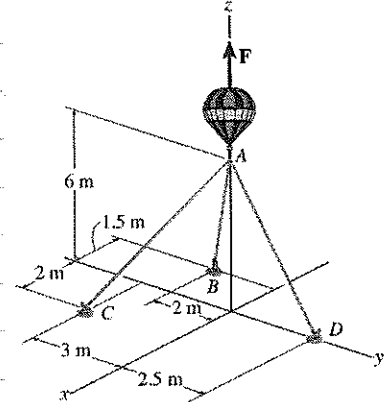


NAME

DATE

**PROBLEM AP-15****GIVEN:**

If the balloon is subjected to a net uplift force of  $F = 800 \text{ N}$ , determine the tension developed in ropes  $AB$ ,  $AC$ ,  $AD$ .

**REQUIRED:**
 $F_{AB}, F_{AC}, F_{AD}$ 
**SOLUTION:**

$$\vec{F}_{AB} = \left\{ \frac{3}{13} F_{AB} \hat{i} - \frac{4}{13} F_{AB} \hat{j} - \frac{12}{13} F_{AB} \hat{k} \right\}$$

$$\vec{F}_{AC} = \left\{ \frac{2}{7} F_{AC} \hat{i} - \frac{3}{7} F_{AC} \hat{j} - \frac{6}{7} F_{AC} \hat{k} \right\}$$

$$\vec{F}_{AD} = \left\{ 0 \hat{i} + \frac{5}{13} F_{AD} \hat{j} - \frac{12}{13} F_{AD} \hat{k} \right\}$$

$$\vec{F} = \left\{ 0 \hat{i} + 0 \hat{j} + 800 \hat{k} \right\}$$

$$\sum \vec{F} = 0 \quad \downarrow \quad \downarrow \quad \downarrow$$

$$F_{AB} = 251 \text{ N}$$

$$F_{AC} = 203 \text{ N}$$

$$F_{AD} = 427 \text{ N}$$

$F_{AB} = 251 \text{ N}$ $F_{AC} = 203 \text{ N}$ $F_{AD} = 427 \text{ N}$
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