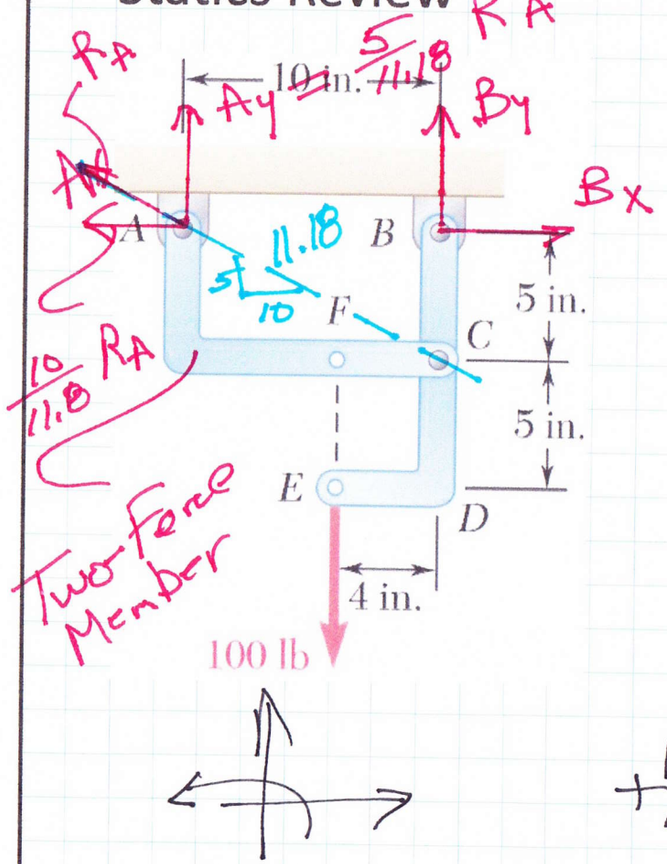
Statics Review



Calculate the External Reactions

$$\circlearrowleft + \sum M_B = 0$$

$$-\frac{5}{11.18} R_A (10) + 100(4) = 0$$

$$R_A = +89.44 \text{ lb} \nwarrow \text{ as shown}$$

$$\pm \rightarrow \sum F_x = 0$$

$$-\frac{10}{11.18} R_A + B_x = 0$$

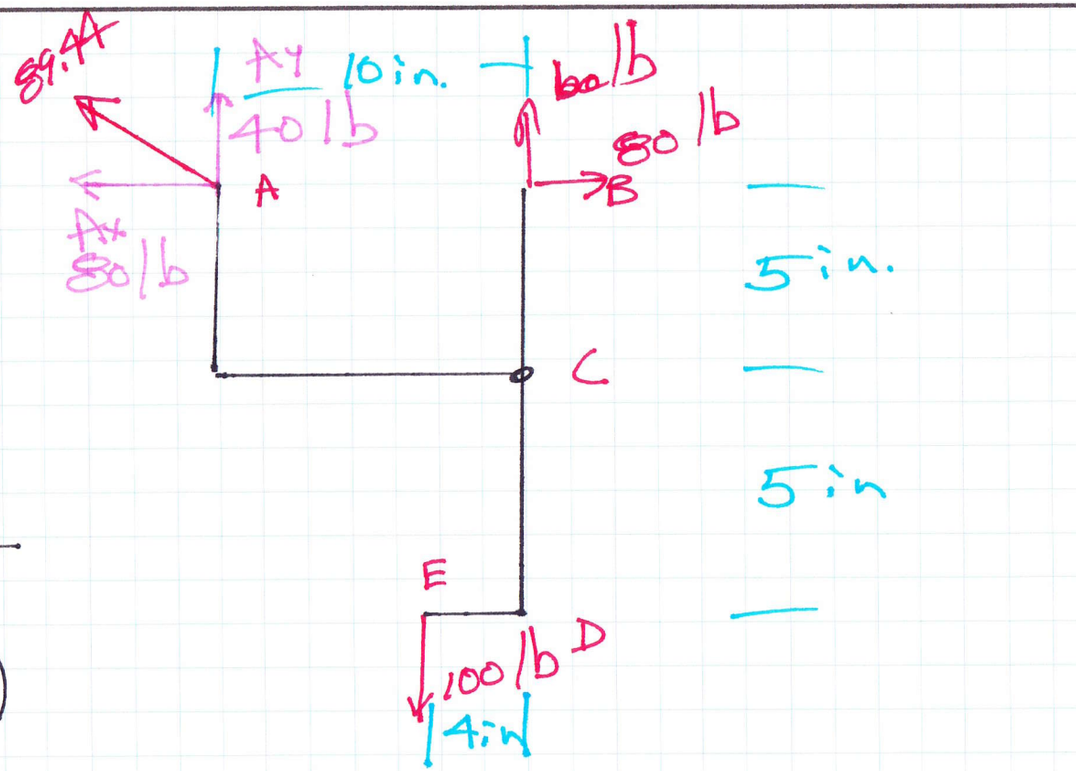
$$B_x = 80 \text{ lb} \rightarrow \text{ as shown}$$

$$+\uparrow \sum F_y = 0$$

$$A_y + B_y - 100 = 0$$

$$\frac{5}{11.18} R_A + B_y - 100 = 0 \qquad R_A = 89.447$$

$$B_y = +60 \text{ lb} \uparrow \text{ as shown}$$



$$A_x = \frac{10}{11.18}(89.44)$$

$$A_x = 80\ lb \leftarrow$$

$$A_y = \frac{5}{11.18}(89.44)$$

$$A_y = 40\ lb \uparrow$$

Summary Sketch

Basic Steps to Solving a Statics Problem

Examine the problem

- Identify the Support Conditions
- Special Conditions
- Set up Consistent Units

Draw Free Body Diagram

- Rough Sketch
- Indicate unknown forces and reactions
- Indicate known forces and reactions
- Indicate a sign Convention

- Dimensions

Formulate Equations

Scalar Equations of Equilibrium

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$\Sigma F_x = 0$

$\Sigma F_y = 0$

$\Sigma M_z = 0$

Equations of Condition

2-force Members

internal hinges

Solve the Equations

Brute force Approach

Intuitive Approach - work your way through without having to use simultaneous equations.

Summary Sketch