

Course No. CE 1023

Assignment No. 6 Date FEB 25, 2015

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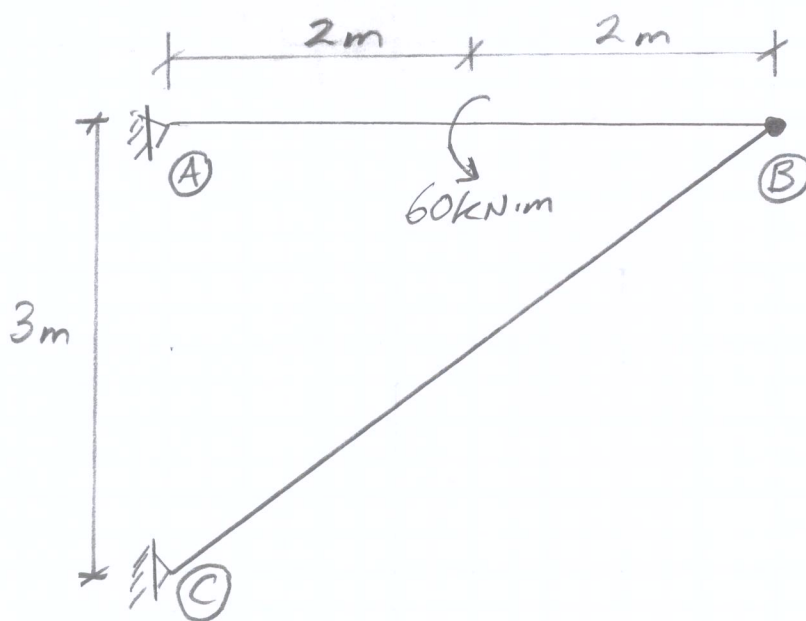
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Problem No. 1

By ALAN LLOYD

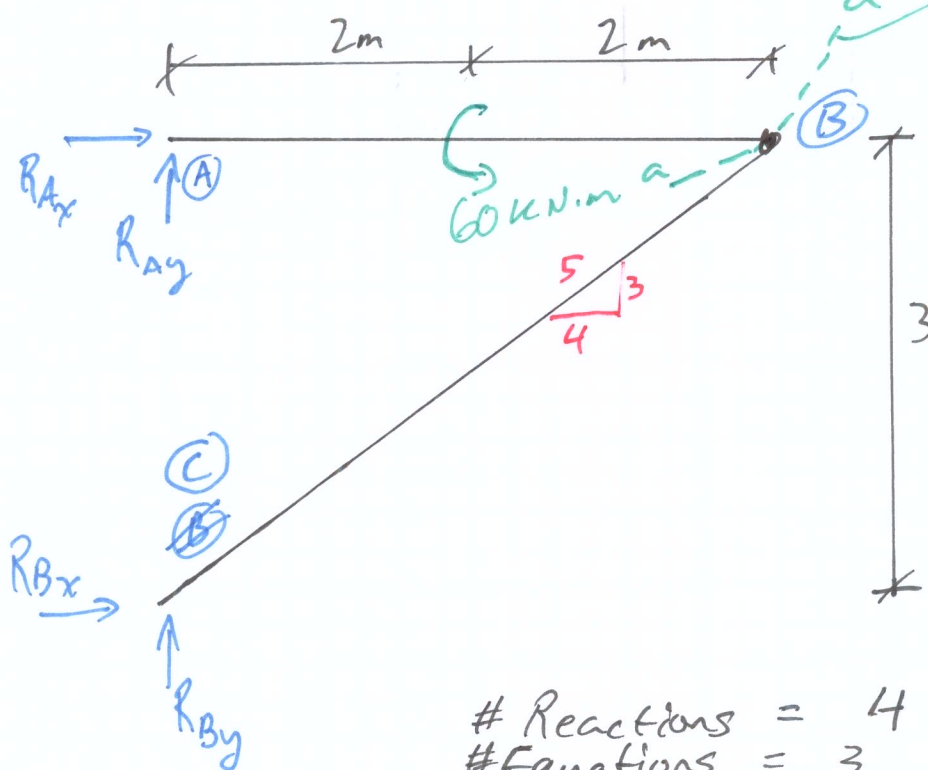
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FOR THE FRAME FIND REACTIONS

A: Pin
 B: Pin joint
 C: Pin

LOAD: 60 kN.m @
 2m in AB



Reactions = 4 (unknowns)
 # Equations = 3

$$\sum F_x = 0$$

$$\sum F_y = 0$$

$$\sum M = 0$$

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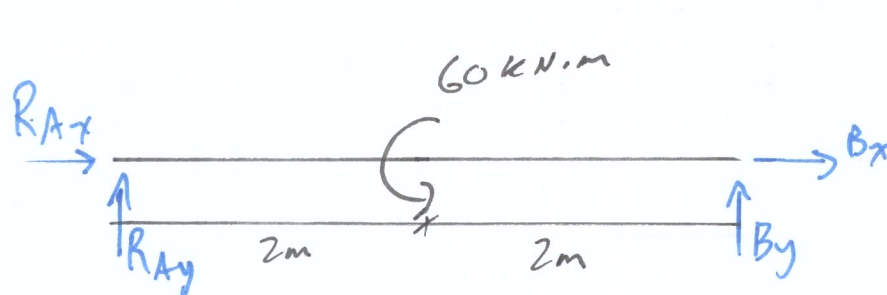
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Problem No.

By **ALAN LLOYD**

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Cut at a-a FBD FOR AB4 unknowns
3 equations

$$\sum M_A = 0 \rightarrow +60 \text{ kN}\cdot\text{m} + B_y(4\text{m}) = 0$$

$$B_y = -15 \text{ kN.}$$

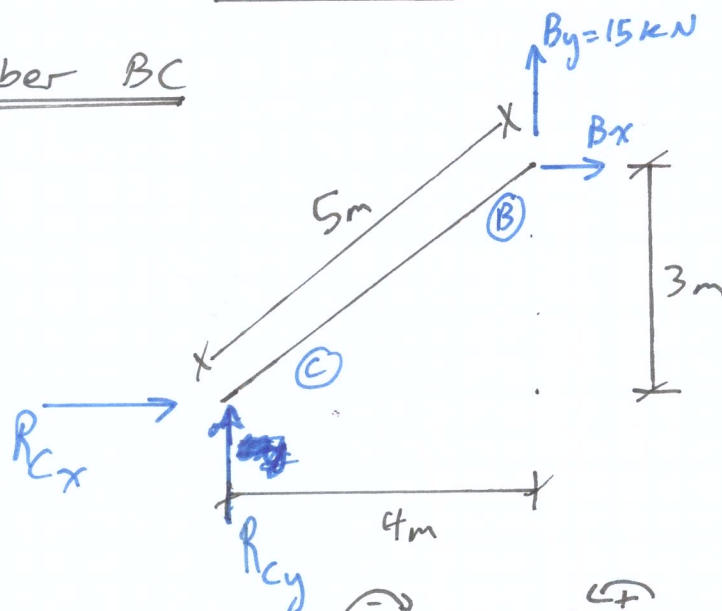
$$B_y = 15 \text{ kN } \downarrow$$

$$\sum F_y = 0 \rightarrow R_{Ay} + B_y = 0$$

$$R_{Ay} + (-15) = 0$$

$$\rightarrow R_{Ay} = +15 \text{ kN } \uparrow$$

$$\sum F_x = 0 \rightarrow R_{Ax} + B_x = 0$$

Member BC2 FORCE MEMBER

$$B_y = -R_{Cy}$$

$$B_x = -R_{Cx}$$

$$R_{Cy} = -15 \text{ kN}$$

$$R_{Cy} = 15 \text{ kN } \downarrow$$

$$\sum M_C = 0 \quad -B_x(3\text{m}) + 15(4\text{m}) = 0$$

$$B_x = +20 \text{ kN } \rightarrow$$

$$R_{Cx} = -B_x = -20 \text{ kN}$$

$$\rightarrow R_{Cx} = 20 \text{ kN } \leftarrow$$

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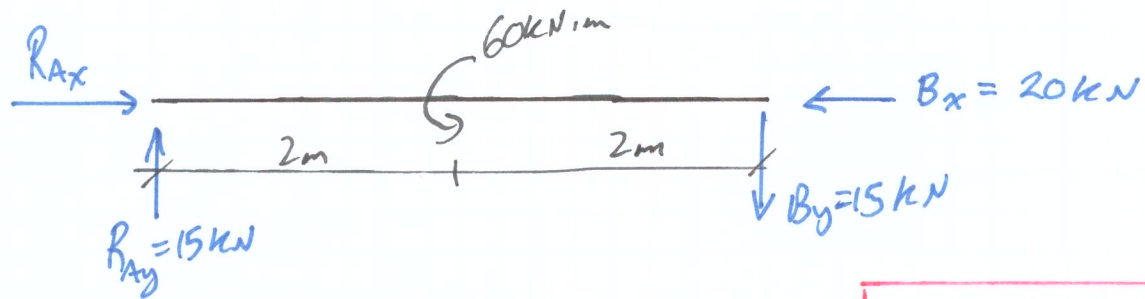
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3GO BACK TO AB

$$\Sigma F_x = 0 \rightarrow R_{Ax} - 20 = 0 \rightarrow \boxed{R_{Ax} = 20 \text{ kN} \rightarrow}$$

Summary Diagram