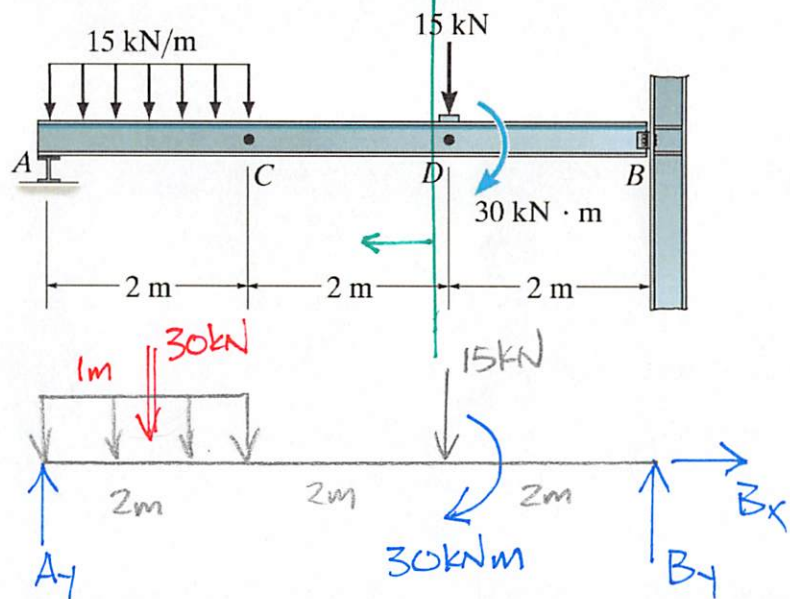
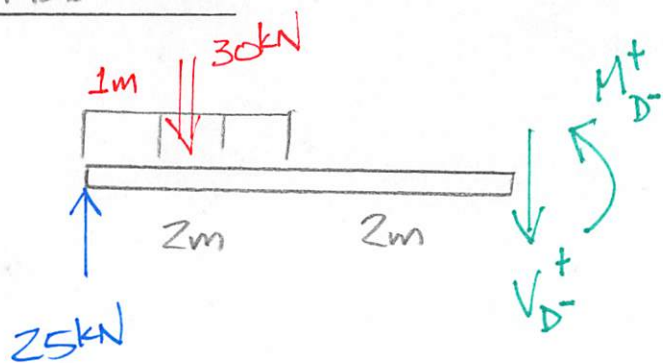


Example 4a-5 - Determine the internal shear force and bending moment at a section to the left of point D.



$$\begin{aligned} \sum M_B = 0 &= -30 \text{ kN} \cdot \text{m} + 15 \text{ kN}(2 \text{ m}) + 30 \text{ kN}(5 \text{ m}) - A_1(6 \text{ m}) \\ A_1 &= 25 \text{ kN} \end{aligned}$$

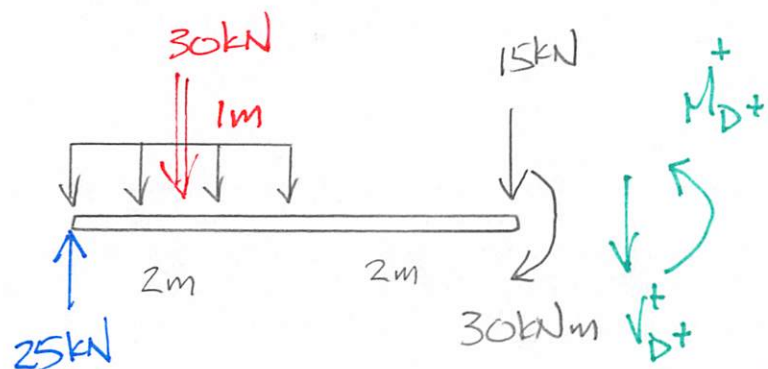
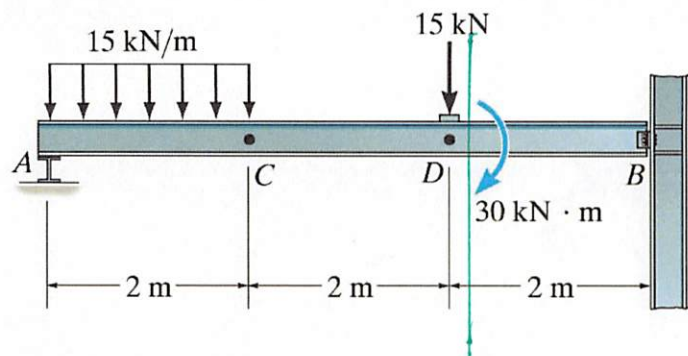
FBD ACD⁻



$$\begin{aligned} \sum M_{D^-} = 0 &= M_{D^-} + 30 \text{ kN}(3 \text{ m}) - 25 \text{ kN}(4 \text{ m}) \\ M_{D^-} &= 10 \text{ kN} \cdot \text{m} \end{aligned}$$

$$\begin{aligned} + \uparrow \sum F_y = 0 &= -V_{D^-} - 30 \text{ kN} + 25 \text{ kN} \\ V_{D^-} &= -5 \text{ kN} \end{aligned}$$

Example 4a-5 - Determine the internal shear force and bending moment at a section to the left of point D.



$$\sum \mathcal{M}_{D^+} = 0 = M_{D^+} - 30 \text{ kN}\cdot\text{m} + 30 \text{ kN}(3 \text{ m}) - 25 \text{ kN}(4 \text{ m})$$

$$M_{D^+} = 40 \text{ kN}\cdot\text{m}$$

$$\sum F_y = 0 = -V_{D^+} - 15 \text{ kN} - 30 \text{ kN} + 25 \text{ kN}$$

$$V_{D^+} = -20 \text{ kN}$$

