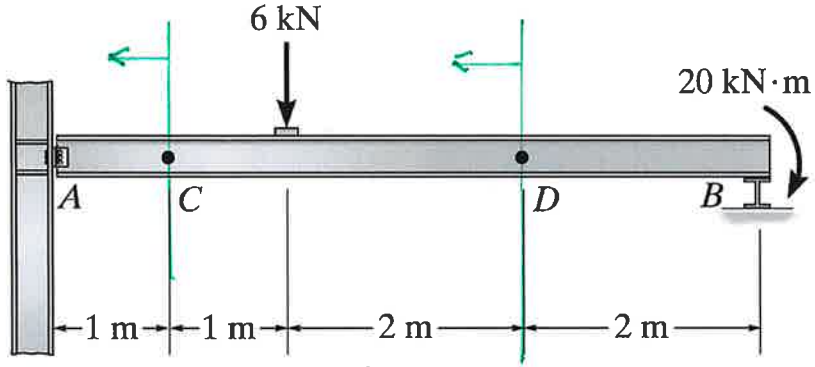
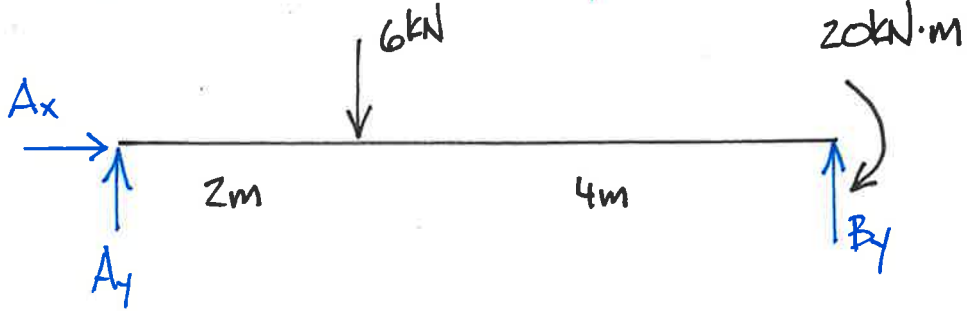
Example 4a-1 - Determine the internal shear and moment in the ~~cantilever~~ beam shown above at a section passing through points *C* and *D*.

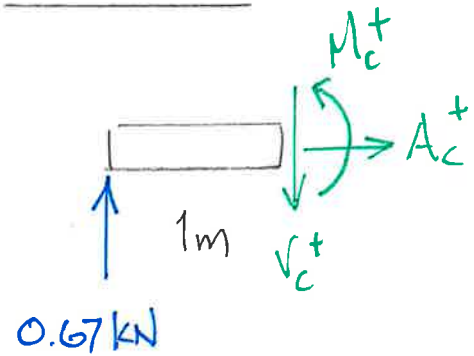




$$\curvearrowleft +\sum M_B = 0 = -20\ \text{kNm} + 6\text{kN}(4\text{m}) - A_y(6\text{m})$$

$$A_y = 0.67\text{kN}$$

SECTION AC



$$\curvearrowleft +\sum M_{cut} = 0 = M_c - 0.67\text{kN}(1\text{m})$$

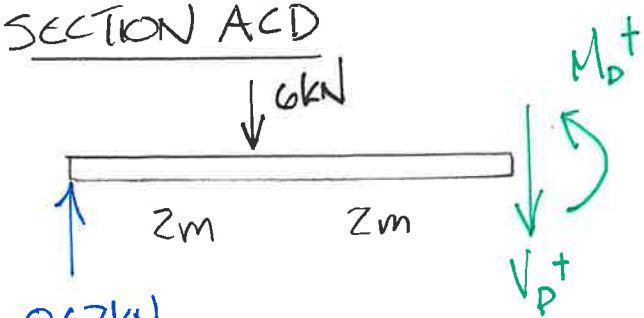
$$M_c = 0.67\text{kNm}$$

$$+\uparrow \sum F_y = 0 = -V_c + 0.67\text{kN}$$

$$V_c = 0.67\text{kN}$$

$$\rightarrow +\sum F_x = 0 = A_c$$

SECTION ACD



$$\curvearrowleft +\sum M_{cut} = 0 = M_D + 6\text{kN}(2\text{m}) - 0.67\text{kN}(4\text{m})$$

$$M_D = -9.33\text{kNm}$$

$$+\uparrow \sum F_y = 0 = -V_D - 6\text{kN} + 0.67\text{kN}$$

$$V_D = -5.33\text{kN}$$