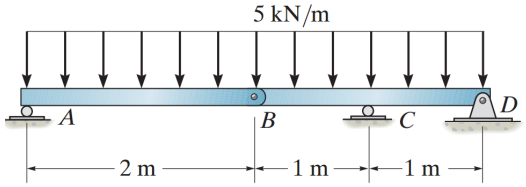
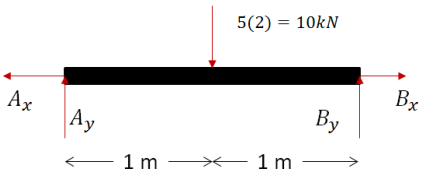
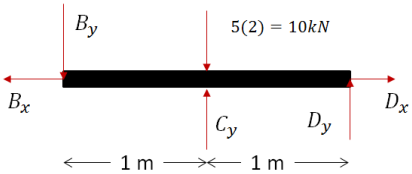
Example 9.14

Draw the shear force and bending moment diagrams in the plot axes below for the loaded beam shown.







Solution:

FBD for Link AB:

$$\sum M_A = 0: B_y(2) - 10(1) = 0 \quad => \quad B_y = 5\ kN$$

$$\sum F_y = 0: A_y + B_y - 10 = 0 \quad => \quad A_y = 5\ kN$$

FBD for link BD:

$$\sum M_c = 0: \quad 5(1) + D_y = 0 \quad => D_y = -5\ kN$$

$$\sum F_y = 0: \ C_y + D_y - B_y - 10 = 0 \ => \ C_y = 20\ kN$$

Shear Force Diagram and Bending Moment Diagram