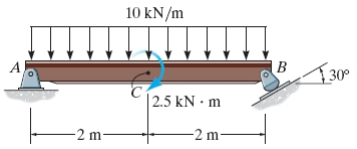
Exercise

7–3. Determine the internal normal force, shear force, and moment at point C in the simply supported beam. Point C is located just to the right of the 2.5 kN · m couple moment.

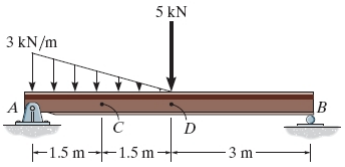


$N_C = -11.908$ kN **Ans.**

$V_C = -0.625$ kN **Ans.**

$M_C = 21.25$ kN · m **Ans.**

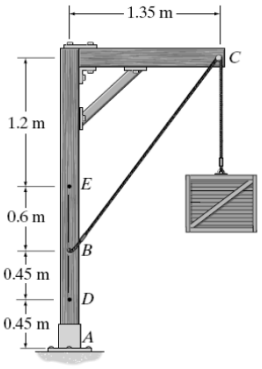
***7–8.** Determine the internal normal force, shear force, and moment at points C and D in the simply supported beam. Point D is located just to the left of the 5-kN force.



$V_C = 2.875$ kN $V_D = 1.75$ kN

$M_C = 6.56$ kN · m $M_D = 9.75$ kN · m

•7–25. Determine the internal normal force, shear force, and moment at points D and E of the frame which supports the 100-kg crate. Neglect the size of the smooth peg at C.



$V_D = 0$

$N_D = 981$ N

$M_D = 1324.35$ N · m

$V_E = 588.6$ N

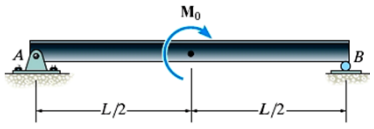
$N_E = 1765.8$ N

$M_E = 1677.51$ N · m

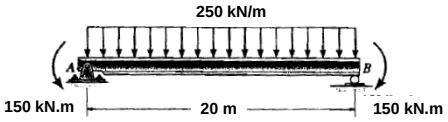
1

Exercise

•7–45. If $L = 9$ m, the beam will fail when the maximum shear force is $V_{max} = 5$ kN or the maximum bending moment is $M_{max} = 22$ kN · m. Determine the largest couple moment M_0 the beam will support.

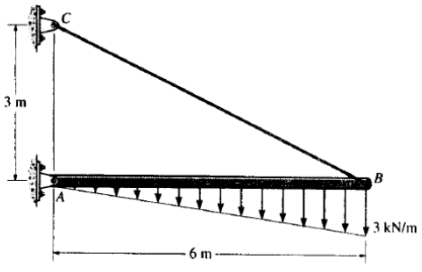


M_0 = 44 kN · m Ans



7-51. Draw the shear and bending moment diagram for the beam. Determine the maximum moment.

Mmax = 12350 kN.m



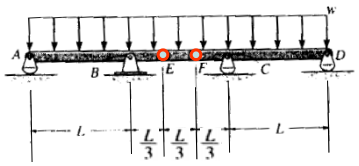
7-56. Draw the shear and bending moment diagram for the beam. Determine the maximum moment.

Mmax = 6.93 kN · m

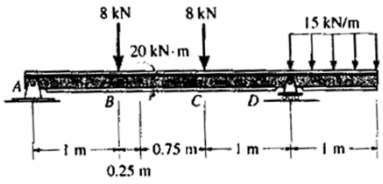
2

Exercise

7-55. Draw the shear and moment diagrams for the compound beam. The beam is pin-connected at E and F.



7-77. **Draw the shear and moment diagrams for the beam.**



7-83. Draw the shear and moment diagrams for the beam.