

Homework Chapter 6

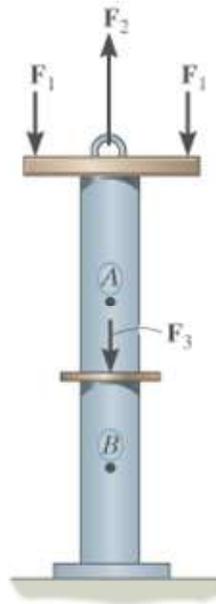
Problem 6-1: The axial forces act on the shaft as shown. Determine the internal normal force at points *A* and *B*.

Given:

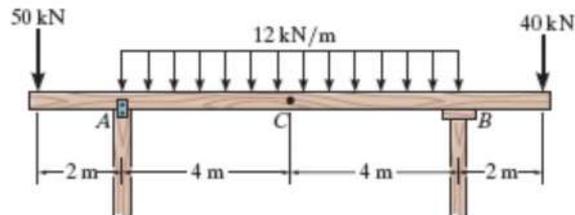
$$F_1 = 100 \text{ N}$$

$$F_2 = 250 \text{ N}$$

$$F_3 = 50 \text{ N}$$



Problem 6-2: Determine the normal force, shear force, and moment at a section passing through point *C*. Assume the support at *A* can be approximated by a pin and *B* as a roller.



Problem 6-3: Determine the normal force, shear force, and moment at a section passing through point *D* of the two-member frame.

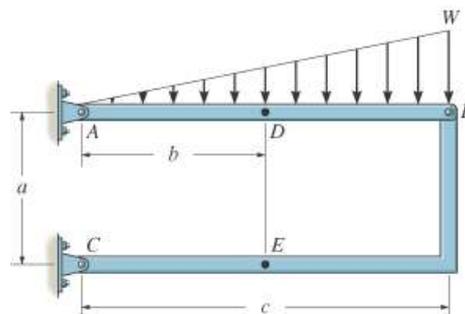
Given:

$$w = 400 \text{ N/m}$$

$$a = 2.5 \text{ m}$$

$$b = 3 \text{ m}$$

$$c = 6 \text{ m}$$



Problem 6-4: Determine the normal force, shear force, and moment at a section passing through point D of the two-member frame.

Given:

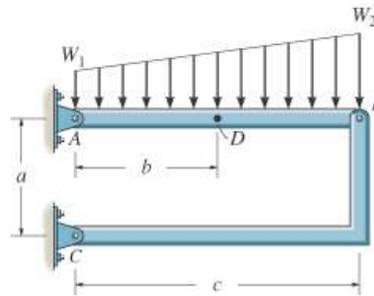
$$w_1 = 200 \text{ N/m}$$

$$w_2 = 400 \text{ N/m}$$

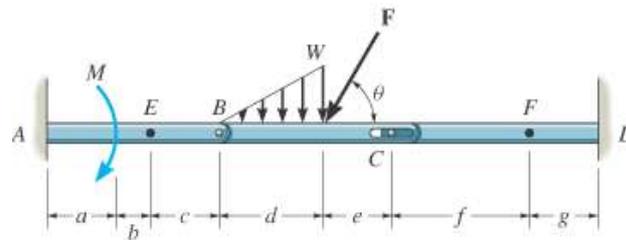
$$a = 2.5 \text{ m}$$

$$b = 3 \text{ m}$$

$$c = 6 \text{ m}$$



Problem 6-5: Determine the normal force, shear force, and moment at sections passing through points E and F . Member BC is pinned at B and there is a smooth slot in it at C . The pin at C is fixed to member CD .



Given:

$$M = 500 \text{ N}\cdot\text{m}$$

$$w = 1200 \frac{\text{N}}{\text{m}} \quad c = 1 \text{ m}$$

$$F = 2500 \text{ N} \quad d = 1.5 \text{ m}$$

$$\theta = 60 \text{ deg} \quad e = 1 \text{ m}$$

$$a = 1 \text{ m} \quad f = 2 \text{ m}$$

$$b = 0.5 \text{ m} \quad g = 1 \text{ m}$$

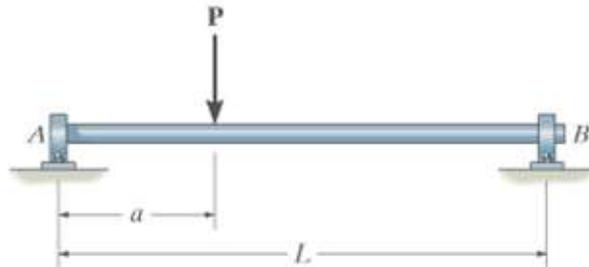
Problem 6-6: Draw the shear and moment diagrams for the shaft (a) in terms of the parameters shown; (b) set P , a , L . There is a thrust bearing at A and a journal bearing at B .

Given:

$$P = 9 \text{ kN}$$

$$a = 2 \text{ m}$$

$$L = 6 \text{ m}$$

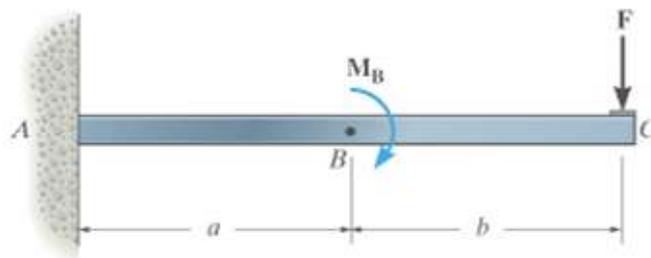


Problem 6-7: Draw the shear and moment diagrams for the beam.

Given:

$$M_B = 1200 \text{ N}\cdot\text{m} \quad a = 1.5 \text{ m}$$

$$F = 500 \text{ N} \quad b = 1.5 \text{ m}$$

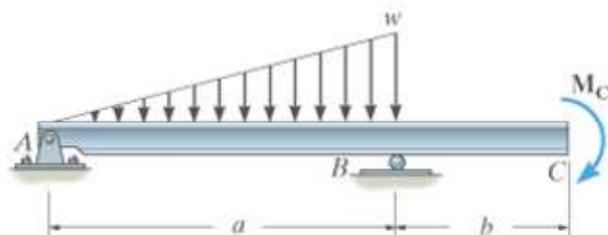


Problem 6-8: Draw the shear and moment diagrams for the beam.

Given:

$$w = 200 \frac{\text{N}}{\text{m}} \quad M_C = 250 \text{ N}\cdot\text{m}$$

$$a = 3 \text{ m} \quad b = 1.5 \text{ m}$$



Problem 6-9: Draw the shear and moment diagrams for the beam.

Given:

$$F = 8 \text{ kN}$$

$$M = 20 \text{ kN}\cdot\text{m}$$

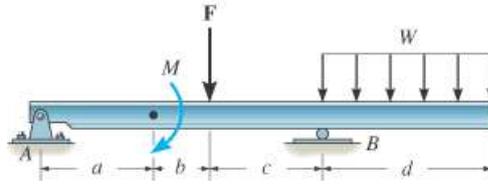
$$w = 15 \text{ kN/m}$$

$$a = 2 \text{ m}$$

$$b = 1 \text{ m}$$

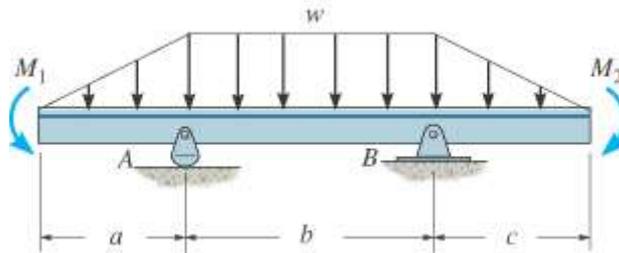
$$c = 2 \text{ m}$$

$$d = 3 \text{ m}$$



Problem 6-10:

Draw the shear and moment diagrams for the beam.



Given:

$$w = 20 \frac{\text{kN}}{\text{m}}$$

$$M_1 = 25 \text{ kN}\cdot\text{m}$$

$$M_2 = 25 \text{ kN}\cdot\text{m}$$

$$a = 2 \text{ m}$$

$$b = 3 \text{ m}$$

$$c = 2 \text{ m}$$