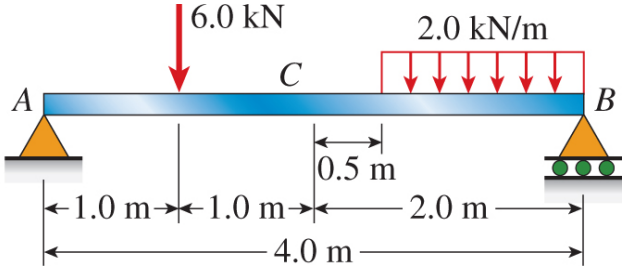
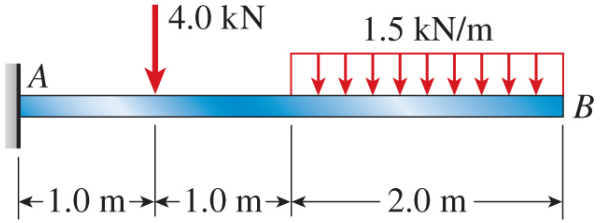
材料力學　作業 11

學號：＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿　　姓名：＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

4.3-2 Determine the shear force V and bending moment M at the midpoint C of the simple beam AB shown in the figure.



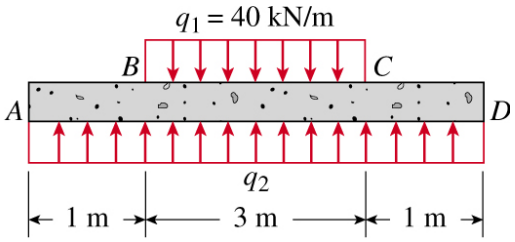
4.3-4 Calculate the shear force V and bending moment M at a cross section located 0.5 m from the fixed support of the cantilever beam AB shown in the figure.



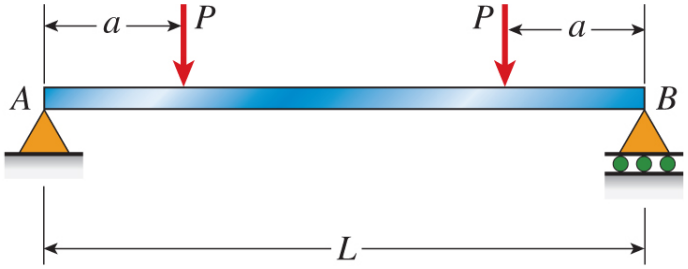
4.3-13 Beam *ABCD* represents a reinforced-concrete foundation beam that supports a uniform load of intensity $q_1 = 40 kN \cdot m$ (see figure). Assume that the soil pressure on the underside of the beam is uniformly distributed with intensity q_2.

(a) Find the shear force V_B and bending moment M_B at point *B*.

(b) Find the shear force V_m and bending moment M_m at the midpoint of the beam.

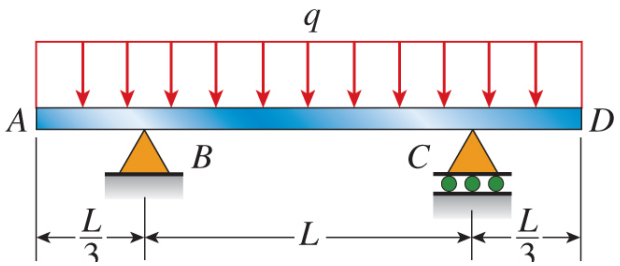


4.5-1 Draw the shear-force and bending-moment diagrams for a simple beam *AB* supporting two equal concentrated loads *P* (see figure).

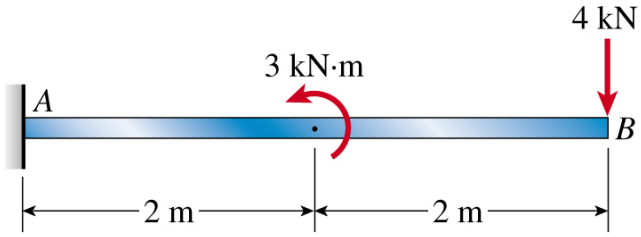


4.5-9 Beam *ABCD* is simply supported at *B* and *C* and has overhangs at each end (see figure). The span length is *L* and each overhang has length *L*/3. A uniform load of intensity *q* acts along the entire length of the beam.

Draw the shear-force and bending-moment diagrams for this beam.

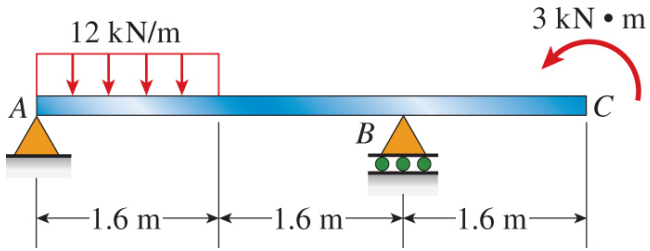


4.5-13 A cantilever beam *AB* supports a couple and a concentrated load, as shown in the figure. Draw the shear-force and bending-moment diagrams for this beam.



4.5-16 A beam *ABC* with an overhang at one end supports a uniform load of intensity 12 kN/m and a concentrated moment of magnitude 3 kN·m at *C* (see figure).

Draw the shear-force and bending-moment diagrams for this beam.



4.5-30 The compound beam *ABCDE* shown in the figure consists of two beams (*AD* and *DE*) joined by a hinged connection at *D*. The hinge can transmit a shear force but not a bending moment. The loads on the beam consist of a 4-kN force at the end of a bracket attached at point *B* and a 2-kN force at the midpoint of beam *DE*. Draw the shear-force and bending-moment diagrams for this compound beam.