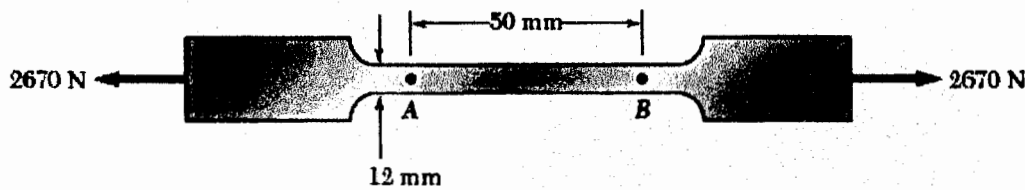


※ 考生請注意：本試題不可使用計算機

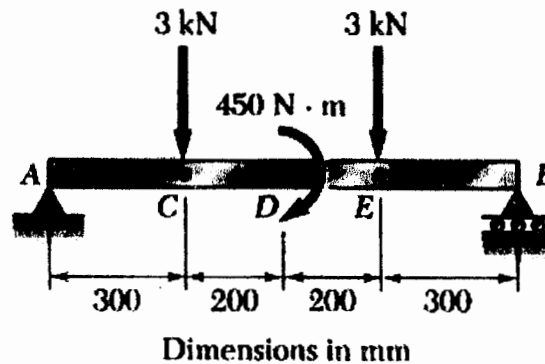
1. (20pts) Explain the following terms:

(a) anisotropic material, (b) strain hardening, (c) necking, (d) shear strain, (e) stress concentration factor, (f) plastic section modulus, (g) maximum shear stress yield criterion, (h) statically indeterminate beam, (i) strain energy, (j) Castigliano's theorem.

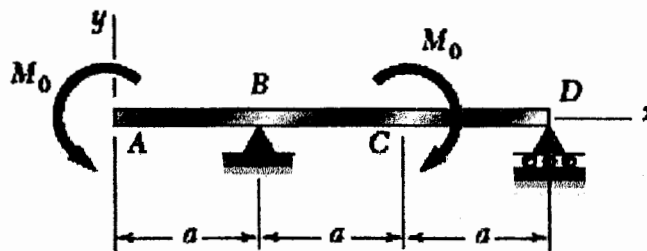
2. (20pts) A 2670 N tensile load is applied to a test coupon made from 1.5 mm flat steel plate ($E = 200$ GPa, and $\nu = 0.3$). Determine the resulting change (a) in the 50 mm gage length, (b) in the cross-sectional area of portion AB.



3. (20pts) Draw the shear and bending-moment diagrams for the beam and loading shown.



4. (20pts) For the beam and loading shown, determine (a) the deflection at end A, (b) the slope at end D.



(背面仍有題目, 請繼續作答)

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5. (20pts) Members of the truss shown are made of steel and have the cross-sectional areas shown. Using $E = 200 \text{ GPa}$, determine the vertical deflection of joint C caused by the application of the 210-kN load.

