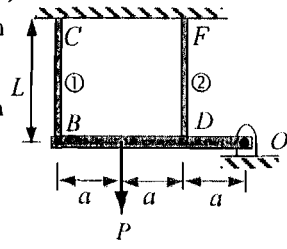
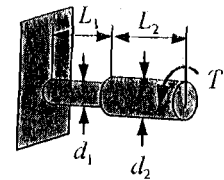


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✓	簡單型計算機
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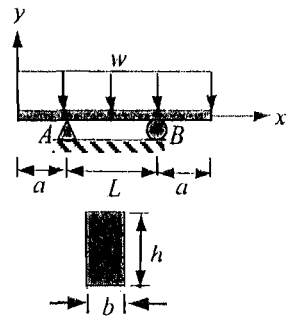
- 1.(25%) A rigid beam ODB is supported by two identical bars, each having cross-sectional area $A=3000\text{mm}^2$, length $L=1200\text{mm}$, and modulus of elasticity $E=200\text{GPa}$. The rigid beam is connected to the ground with a pin at O and the beam is subjected to a load $P=75\text{kN}$. Determine
- stresses in the two bars.
 - displacements of the two bars.



- 2.(25%) A shaft consisting of two solid cylindrical segments is fixed at one end and is subjected to a torque $T=600\text{N}\cdot\text{m}$. The two segments have the lengths $L_1=0.5\text{m}$, $L_2=0.6\text{m}$, and the diameters $d_1=40\text{mm}$ and $d_2=60\text{mm}$. The shear modulus of elasticity $G=75\text{GPa}$. Determine
- the maximum shear stress in the shaft.
 - the twist angle at the free end.



- 3.(25%) The beam shown in the figure has the overhang distance $a=0.5\text{m}$, and the span length $L=1\text{m}$. Calculate the maximum bending stress due to a uniform load $w=4\text{kN/m}$ if the beam has a rectangular cross section with width $b=240\text{mm}$ and height $h=500\text{mm}$.



- 4.(25%) The stress components for an element in a state of plane stress are shown in the figure. Determine
- principal stresses and principal directions, and show them on a sketch of properly oriented element.
 - maximum shear stresses and their directions, also show them on a sketch of properly oriented element.

