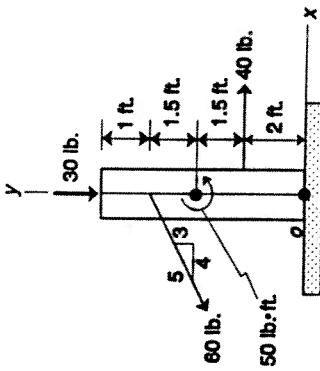


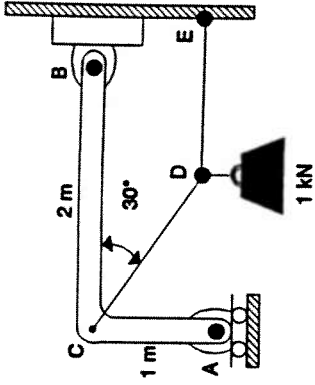
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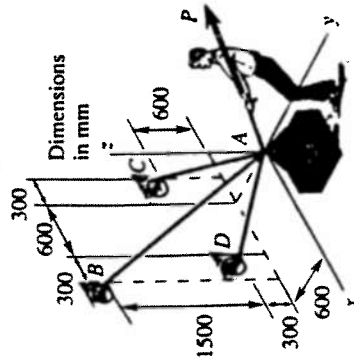
Replace the loading system shown acting on the post by an equivalent force and couple system at point o .



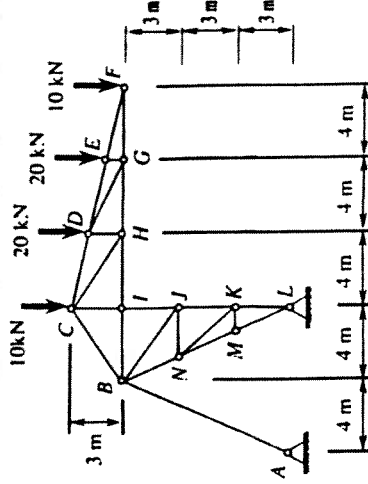
3. Determine the reactions exerted at A and B on the bent bar AB. Neglect the thickness of the bar.



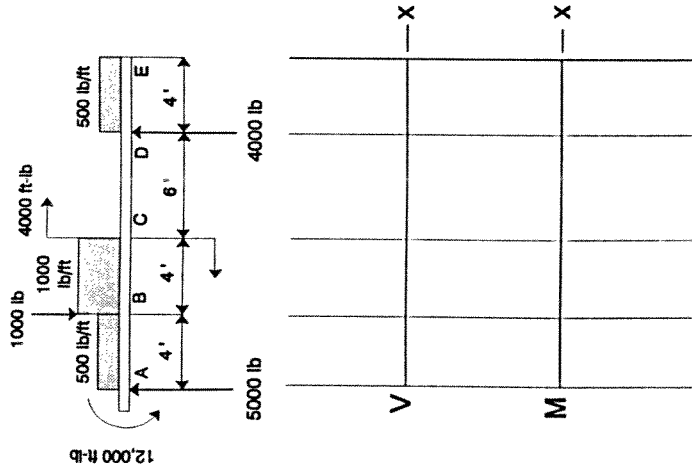
2. A 12-kg. crate is suspended as shown. Determine the applied force P which will induce cable tensions $T_{AB} = 70 \text{ N}$, $T_{AC} = 45 \text{ N}$ and $T_{AD} = 0 \text{ N}$.



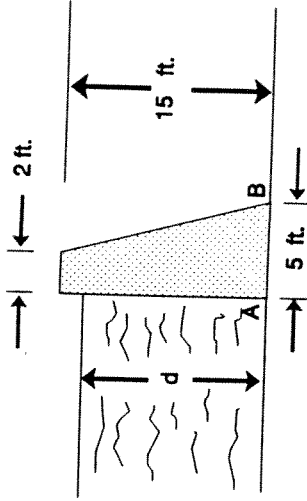
4. Use the method of sections to determine the forces in the members BC, BI, and DI of the truss loaded as shown. Also, list all zero force members.



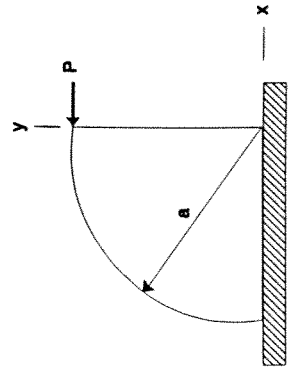
5. The beam shown below is loaded with a 12,000 ft-lb couple, a 1,000 lb point load, and three regions of constant distributed loads. The support reactions are given as well. Draw the shear force and bending moment diagrams for the beam shown. Be sure to label all significant points.



7. The cross section of a concrete dam is shown where a seal exists at A and no water pressure is present under the dam. If the specific weight of concrete is 2.5 times that of water, determine the maximum value of the water depth, d , for which the dam will not overturn about B.



6. A horizontal force P is applied to a constant thickness 100-lb homogeneous quarter circular disk of radius a which is initially at rest on the horizontal plane as shown. If $\mu_s = 0.6$ between the disk and the support, determine the minimum magnitude of P required to move the disk.



8. Determine the polar moment of inertia, J_o , for the shaded area shown below

