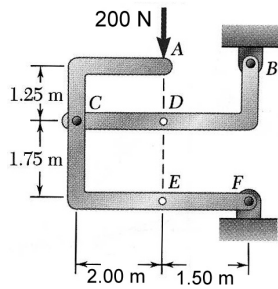
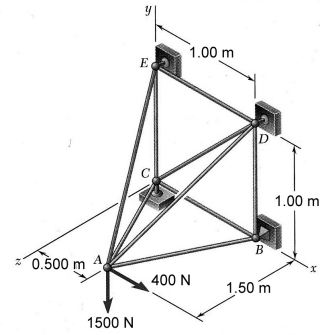
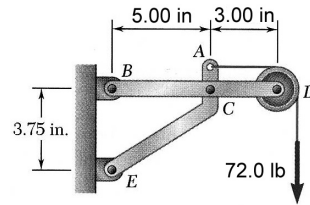


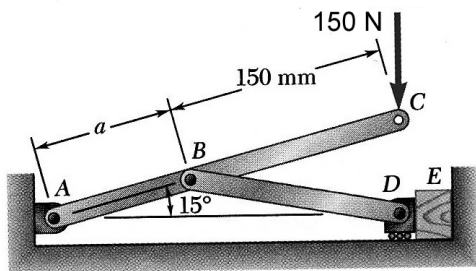
(1) The truss shown is supported by a ball and socket joint at B and short links at C, D, and E. Determine the force in each of the members for the given loading.



(2) In addition to the load shown, a couple of 200 N·m is applied to (a) point D, and (b) point E. Determine the reaction forces at B and F for each of these loadings.

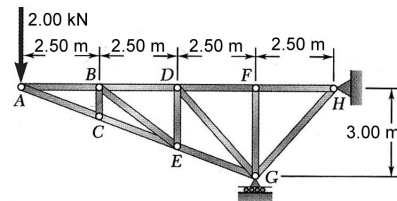


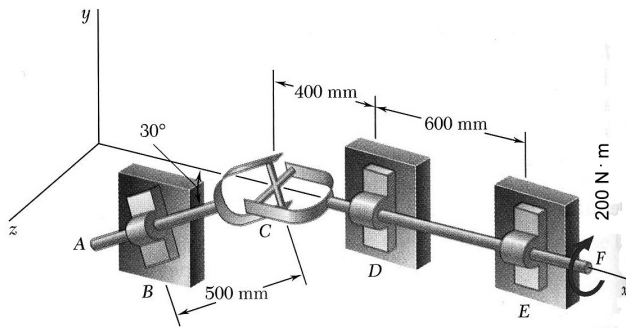
(3) If the pulley at D has a radius of 1.50 in, determine the reaction forces at B and E.



(4) The 150N force is applied directly downward on the toggle vice at C. Link BD is 150 mm long, and given that $a = 75.0$ mm, determine the horizontal force exerted on block E.

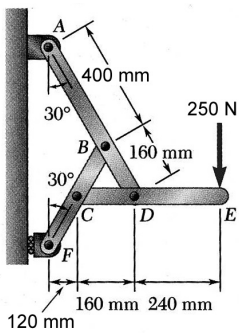
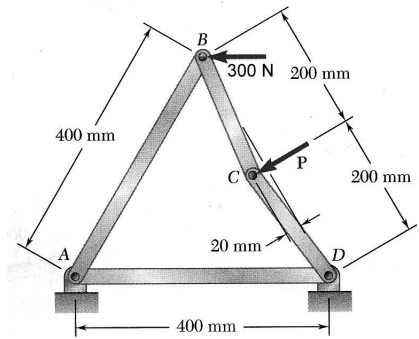
(5) Determine the force in each member of the truss shown. State whether each member is in tension or compression.





(6) The two shafts AC and CF lie in the x-y plane and are connected by a universal joint at C. The bearings at B, D, and E do not exert any axial force. A couple of $200 \text{ N}\cdot\text{m}$ ($-\hat{i}$) is applied to the shaft at F. At the time when the arm of the crosspiece attached to shaft CF is horizontal, determine (a) the magnitude of the couple which must be applied to the shaft at A to maintain equilibrium, (b) the reactions at B, D, and E. (Hint: the sum of the couples exerted on the crosspiece must be zero.)

(7) Determine the force P which must be applied to the toggle BCD to maintain equilibrium in the position shown.



(8) For the frame and loading shown, determine the forces acting on the member CDE at C and D.)