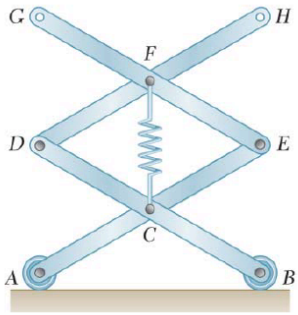
ES 208 Mechanics

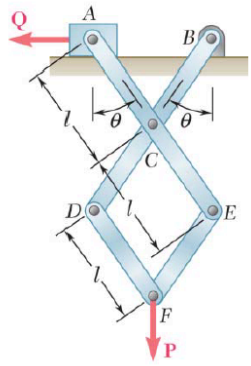
Tutorial 11

All problems are taken from Beer and Johnston's book



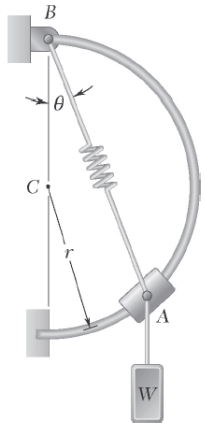
PROBLEM 10.5

A spring of constant 15 kN/m connects Points C and F of the linkage shown. Neglecting the weight of the spring and linkage, determine the force in the spring and the vertical motion of Point G when a vertical downward 120-N force is applied (a) at point C, (b) at Points C and H.



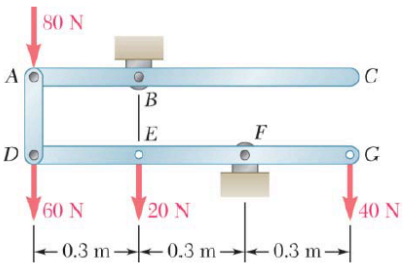
PROBLEM 10.51

Denoting by μ_s the coefficient of static friction between the block attached to rod ACE and the horizontal surface, derive expressions in terms of P, μ_s, and θ for the largest and smallest magnitude of the force **Q** for which equilibrium is maintained.



PROBLEM 10.88

Collar A can slide freely on the semicircular rod shown. Knowing that the constant of the spring is k and that the unstretched length of the spring is equal to the radius r, determine the value of θ corresponding to equilibrium when $W = 200$ N, $r = 180$ mm, and $k = 3$ kN/m



PROBLEM 10.67

Show that equilibrium is neutral in Problem 10.1.

PROBLEM 10.1 Determine the vertical force **P** that must be applied at C to maintain the equilibrium of the linkage.