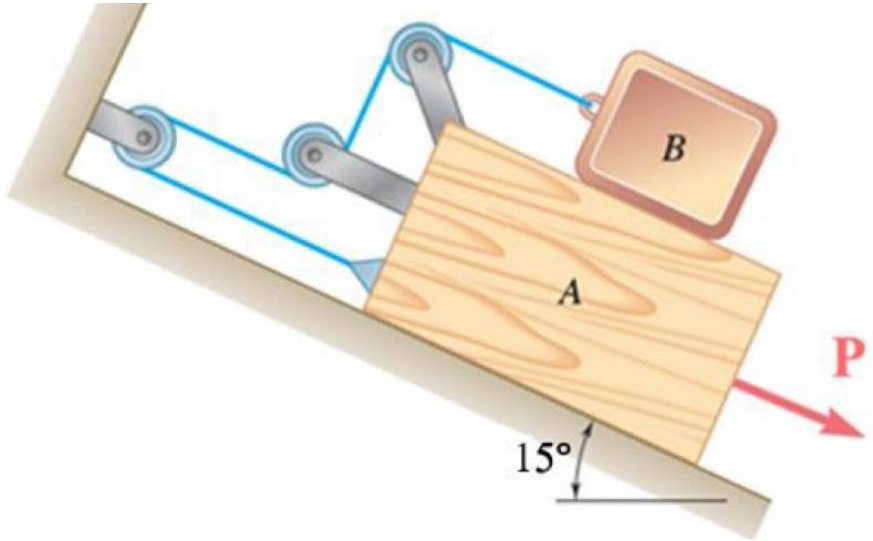
- **Problem 1** Box A has a mass of 50 kg, and box B has a mass of 10 kg. The friction between boxes A and B is negligible, as is friction between the rope and all pulleys. The coefficient of static friction between box A and the inclined surface is 0.4.

  (a) Draw individual free-body diagrams for boxes A and B. (*5 points*)

  (b) Determine if the system will remain stationary (boxes will not slip) for $P = 0$ by writing and solving equilibrium equations. (*10 points*)

  (c) What is the largest value of P for which the system remains stationary (boxes do not slip)? (*10 points*)



- Problem 2 The coefficient of static friction between the 50-kg crate and the ramp is $\mu_s = 0.35$. The unstretched length of the spring is 800 mm, and the spring constant is $k = 660$ N/m. What is the minimum value of x at which the crate can remain stationary on the ramp?