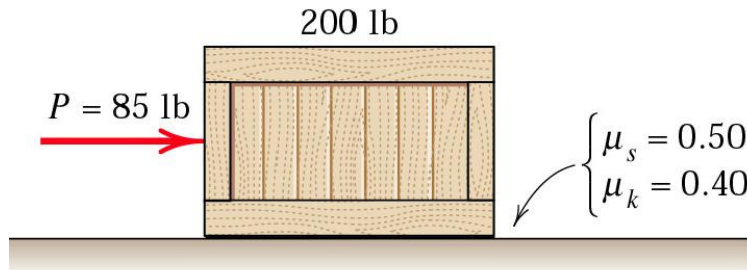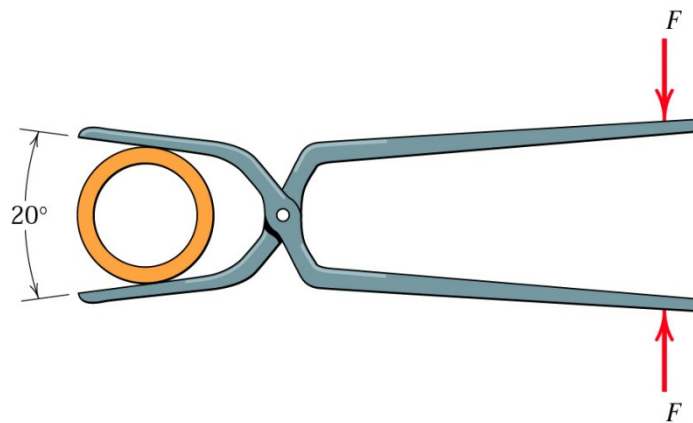# Lecture 8: Exercises

(1) The 700N force is applied to the 100kg block as shown in the figure. The block is originally at rest. Determine the magnitude and direction of the friction force F exerted by the horizontal surface of the block.

(2) The tongs are designed to handle steel tubes as shown below. For a 20° jaw opening, find the minimum coefficient of static friction between the jaws and the tube which enables the tongs to grip the tube without slipping.

(3) Determine the distance s to which a 90kg person can safely climb without causing the ladder to slip at the lower end. The top part of the ladder has a smaller roller which rests on the vertical wall and the coefficient of static friction between the ladder and the ground is 0.25. It can be assumed that only the feet of the person are in contact with the ladder.

Hint: Begin with a free body diagram of the ladder.