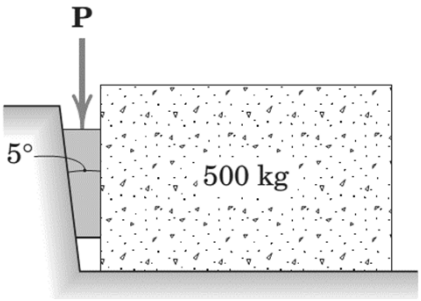
Friction in Simple Machines: Wedges

➢Example

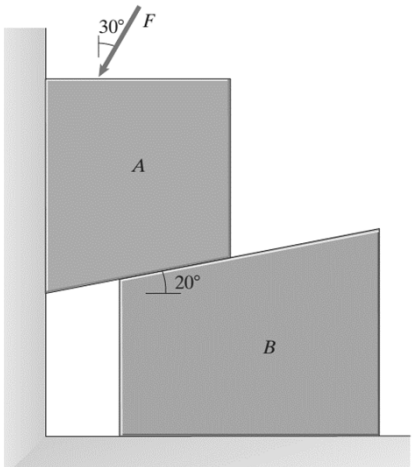
The horizontal position of the 500-kg rectangular block of concrete is adjusted by the 5^0 wedge under the action of the force P. If the coefficient of static friction for both wedge surfaces is 0.30 and if the coefficient of static friction between the block and the horizontal surface is 0.60, determine the least force P required to move the block.



Friction in Simple Machines: Wedges

➢Example

The masses of the blocks A and B are 30 kg and 70 kg respectively. The co-efficient of static friction between all of the contacting surfaces is 0.1. What is the largest force F that can be applied without causing the blocks to slip?



Friction in Simple Machines: Screws

Example

The mass of block A in Figure 5 is 60 kg. The coefficient of friction between the thread and the mating groove is 0.2 and that between all other rubbing surfaces is 0.4. The pitch of the thread on the shaft is 5 mm. Take the mean radius of the screw to be 15 mm.

a) Neglecting the weight of the wedge, determine the force that must applied to raise the block with the wedge.

b) Determine the minimum couple that must turn the screw in order to raise block A