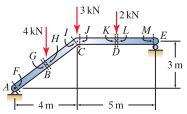
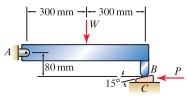
The structure shown consists of a single member $ABCDE$ with a pin support at $A$ and a roller support at $E$. Points $B$ and $D$ are at the midpoints of their respective segments. Determine the internal forces acting on:




**Problem 8.6** Cross sections $F$, $G$, $H$, and $I$, which are located immediately to the right of $A$, the left of $B$, the right of $B$, and the left of $C$, respectively.

**Problem 8.7** Cross sections $J$, $K$, $L$, and $M$, which are located immediately to the right of $C$, the left of $D$, the right of $D$, and the left of $E$, respectively.

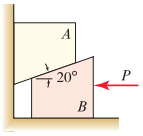
A wedge is used to level a structure. All contact surfaces have coefficients of static and kinetic friction of 0.3 and 0.25, respectively, and $W = 500\,\text{N}$. Assume the dimensions of the wedge are small. Determine the value of $P$ to cause impending motion of the wedge:




(a) To the left.

(b) To the right.

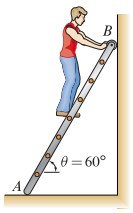
Blocks $A$ and $B$ each have 2 kg mass. All contact surfaces have the same coefficient of friction. Determine the force $P$ needed to cause impending motion of block $B$ to the left if the coefficient of static friction is




**Problem 9.16** 0.4.

**Problem 9.17** 0.3.

An 8 ft long ladder has seven rungs. The rungs are spaced 1 ft apart, and the top and bottom rungs are 1 ft from their respective ends of the ladder. The top of the ladder has a roller. Neglect the weight of the ladder and assume the worker's hand applies no force to the ladder.




(a) If the worker weighs 140 lb and stands on the middle rung, determine the minimum value of the coefficient of friction so that the ladder does not slide.

(b) If the worker weighs 140 lb and stands on a different rung, does your answer to Part (a) change? Explain.

(c) If the worker weighs more than 140 lb and stands on the middle rung, does your answer to Part (a) change? Explain.

The structure consists of two uniform members $AB$ and $BC$, each weighing 2 kN and $P \geq 0$. Determine the minimum coefficient of static friction needed at surface $A$ and the minimum coefficient of static friction needed at surface $C$ so that neither surface slips for any value of $P$ (this is called *self-locking*).