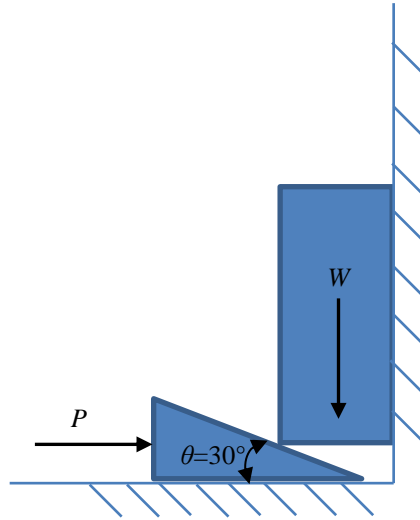


8. The coefficient of static friction between all the surfaces is  $\mu_s = 0.3$ , A random force  $P \sim N(45, 2^2)$  N is applied to the wedge, and the weight of the block is  $W \sim N(20, 1.5^2)$  N due to the manufacturing uncertainty. If  $P$  and  $W$  are independent, what is the probability that the block will be lifted.



**Answer**

The probability that the block will be lifted is

$$P(Y > 0) = 1 - P(Y \leq 0) = 1 - \Phi\left(\frac{-\mu_Y}{\sigma_Y}\right) = 92.01\%$$