4-5. A company makes garage doors as shown in the figure. The garage door is pulled by a rope with a constant force F that will move the door horizontally a distance s to the right. F is a random variable that follows a normal distribution. The distances of a number of doors are measured in 2 seconds, and this results in a distribution $s \sim N(2,0.1^2)$ m. The door has a mass of 10 kg and does not touch the ground by hanging from two rollers, A and B. Find the force F and the vertical reaction forces at the rollers.

Solutions: $F \sim N(10,0.5^2)$ N ; $N_B \sim N(46.55,0.13^2)$ N ; $N_A \sim N(51.55,0.13^2)$ N .