Homework 10

January 6, 2019

For all problems below, please write an expression, unless explicitly stated that I am looking for a number.

1. A stylish boy went shopping on 5th Avenue on black Friday and bought 5 pairs of green socks, 3pairs of yellow, and 2 pairs of purple ones. He mixed them all together for a surprise. What is the probability for him to
   (a) Pull a green sock?
   (b) Pull a second green sock again after pulling (a).
   (c) To pull 2 green socks, Hint: you have to combine (a) and (b)
   (d) To pull green and yellow on the first day?
   (e) To pull purple and yellow on the second after pulling (d)?
2. Suppose we have a box of 500 candies of different colors and sizes. We know that there are 100 large ones and 400 small ones; we also know that there are 70 red ones, 11 of which are large. From this information, can you compute the probability that a randomly chosen candy will be either red or large? Both red and large?
3. A hunter is shooting ducks. Probability of hitting a duck with one shot is $P = 1/3$.
   (a) What is the probability of missing the duck (with one shot)?
   (b) He makes 5 shots. What is the probability that he misses all five?
   (c) What is the probability that out of 5 shots, he will hit at least once? (Hint: everything except missing all!)
   (d) Will this probability double if he makes 10 shots? Use calculator to estimate.
4. You roll 2 dice. What is the probability to never get a 6? (to get anything but 6 on both dice).
5. You roll 3 dice. What is the probability to never get a 6? (to get anything, but 6 on 3 of them.)