Math 373 Hw 7 Recommended problems, don't turn this in.

Hw 201: 5.40, 5.42, 5.46. Rec 201: 5.41. 5.43, 5.45.

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5.41 Let x be the number of successes observed in a sample of $n = 5$ items selected from $N = 10$. Suppose that, of the $N = 10$ items, 6 are considered "successes". Find the probability of

(a) no successes

(b) at least two successes

(c) exactly two successes

5.43 A candy dish contains 5 blue and 3 red candies. A child reaches up and selects 3 candies without looking. Find the probability that the selection has:

(a) 2 blue and 1 red candy.

(b) all red candies.

(c) all blue candies.

5.45 A company has 5 applicants for 2 positions: 2 women and 3 men. Suppose that the 5 applicants are equally qualified and that no preference is given for choosing either gender. Let x equal the number of women chosen to fill the 2 positions.

(a) Write a formula for p(x), the probability of exactly x successes.

(b) What are the mean and variance of this distribution?

Answers

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5.41

(a) 0 (this is impossible and hence has probability 0)
(b) .98
(c) .24

5.43

(a) 2 blue and 1 red candy. .54
(b) all red candies. .02
(c) all blue candies. .18

5.45

(a) Write a formula for p(x), the probability of exactly x successes.
$[C_x^2 C_{2-x}^3]/C_2^5$
(b) What are the mean and variance of this distribution?
$\mu = .8$
$\sigma = .6$