Assignment 2

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1 Prob. 1.15

A box of orange is inspected by examining three randomly selected oranges drawn without replacement. If all the three oranges are good, the box is approved for sale, otherwise, it is rejected. Find the probability that a box containing 15 oranges out of which 12 are good and 3 are bad ones will be approved for sale.

Solution:

E= The probability that the box will be approved for sale

$X_1 = Random variable for first orange$

$X_2 = Random variable for second orange$

$X_3 = Random variable for third orange$

$$P(X_1 = 1) = \frac{12}{15}$$

$$P(X_2 = 1|X_1 = 1) = \frac{11}{14}$$

$$P(X_3 = 1|X_1 = 1, X_2 = 1) = \frac{10}{13}$$

$$P(E) = P(X_1 = 1) \times P(X_2 = 1|X_1 = 1) \times P(X_3 = 1|X_1 = 1, X_2 =$$

$$P(E) = \frac{12}{15} \times \frac{11}{14} \times \frac{10}{13}$$

$$= \frac{1320}{2730}$$

$$= 0.483$$