

1. Consider an accounting firm that uses sampling methods in its client auditing process. Similar accounts are grouped together into batches of 25. Given that a random sample of size  $n = 5$  is the largest practical sample, and that there is one erroneous account, we compute the probability that our sample contains the erroneous account as follows. We note that the probability of a sample containing the bad account follows the binomial distribution, with  $p = 1/25$ ,  $n = 5$ . The probability is then,

$$P(X \geq 1) = 1 - P(X = 0) = 1 - \frac{n!}{x!(n-x)!} p^x (1-p)^{n-x} = 1 - \frac{5!}{0!(5-0)!} (0.04)^0 (0.96)^{5-0} \approx 0.1846273$$

2. Let there now be 2 erroneous accounts in the batch. Thus,  $p$  is now  $p = 2/25$ . We then compute the probability that a sample of size five has at least one erroneous account as,

$$P(X \geq 1) = 1 - P(X = 0) = 1 - \frac{5!}{0!(5-0)!} (0.08)^0 (0.92)^{5-0} =$$