Probability Assignment

Gautam Singh

***Abstract*—This document contains the solution to Question 21 of Exercise 1 in Chapter 15 of the class 10 NCERT textbook.**

1) A lot consists of 144 ball pens of which 20 are defective and the others are good. Nuri will buy a pen if it is good, but will not buy if it is defective. The shopkeeper draws one pen at random and gives it to her. What is the probability that
   a) She will buy it?
   b) She will not buy it?

   Solution: We can model this situation using the random variable $X \sim \text{Ber}(p)$, where p is the probability of success, *i.e.* the pen is purchased. From the given data,

$$1 - p = \frac{20}{144} \implies p = \frac{67}{72} \tag{1}$$

   a) Probability that the pen is purchased is

$$\Pr(X = 1) = p = \frac{67}{72} \tag{2}$$

   b) Probability that the pen is not purchased is

$$\Pr(X = 0) = 1 - p = \frac{5}{72} \tag{3}$$