**Problem Statement 17.3:**

Two balls are drawn at random in succession without replacement from an urn

containing 4 red balls and 6 black balls.

Find the probabilities of all the possible outcomes.

**Solution**

First determine the probabilities of the events.

**Events Probability**

RR = (4/10)(3/9) = 2/15

RB = (4/10)(6/9) = 4/15

BR = (6/10)(4/9) = 4/15

BB = (6/10)(5/9) = 1/3

The probability of 0 blue balls (RR) is 2/15

The probability of 1 blue ball is (RB or BR) is 4/15+4/15 = 8/15

The probability of 2 blue balls (BB) is 1/3

So the probability distribution is: Z p(Z)

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0 = 2/15

1 = 8/15

2 = 1/3