**Assignment 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.

**Given:**

Red balls (R) = 4

Black balls (B) = 6

Total balls (T) = 10

**To do:**

To find all possible outcomes when two balls are drawn at random in succession without replacement.

**Solution:**

Total ways to draw 2 balls = 10 \* 9 = 90 ways

Ways to draw both red balls (RR) = 4 \* 3 = 12 ways

Ways to draw 1 red and 1 black ball (RB) = 4 \* 6 = 24 ways

Ways to draw 1 black and 1 red ball (BR) = 6 \* 4 = 24 ways

Ways to draw both black balls (BB) = 6 \* 5 = 30 ways

**Hence probability of all possible outcomes are:**

Probability of drawing both red balls (RR) = (4/10) \* (3/9) = 12/90 = .1333 = **13.33 %**

Probab of drawing 1 red & 1 black ball (RB) = (4/10) \* (6/9) = 24/90 = .2666 = **26.67 %**

Probab of drawing 1 black & 1 red ball (RB) = (6/10) \* (4/9) = 24/90 = .2666 = **26.67%**

Probability of drawing both black balls (BB) = (6/10) \* (5/9) = 30/90 = .3333 = **33.33 %**