Exercise 15.2

**Q3.** A bag contains 5 red balls and some blue balls. If the probability of drawing a blue ball is double that of a red ball, determine the number of blue balls in the bag.

**Ans.** Let there be $x$ blue balls in the bag.

$\therefore$ Total number of balls in the bag = $5+x$

Now, $P_1$ = Probability of drawing a blue ball = $\frac{x}{5+x}$

And $P_2$ = Probability of drawing a blue ball = $\frac{5}{5+x}$

But according to question, $P_1 = 2P_2$

$$\Rightarrow \frac{x}{5+x} = 2\times\frac{5}{5+x}$$

$$\Rightarrow \frac{x}{5+x}\times\frac{5+x}{5} = 2$$

$$\Rightarrow x = 10$$

Hence, there are 10 blue balls in the bag.

**Q4.** A box contains 12 balls out of which $x$ are black. If one ball is drawn at random from the box, what is the probability that it will be a black ball?

If 6 more black balls are put in the box, the probability of drawing a black ball is now double of what it was before. Find $x$.

**Ans.** There are 12 balls in the box.

Therefore, total number of favourbale outcomes = 12

The number of favourable outcomes = $x$

Therefore $P_1$ = P (getting a black ball) = $\frac{x}{12}$

If 6 more balls put in the box, then

Total number of favourable outcomes = 12 + 6 = 18

And Number of favourable outcomes = $x+6$

$\therefore$ $P_2$ = P (getting a black ball) = $\frac{x+6}{18}$

According to question, $P_2 = 2P_1$

$$\Rightarrow \frac{x+6}{18} = 2\times\frac{x}{12}$$

$$\Rightarrow \frac{x+6}{18}\times\frac{12}{x} = 2$$

$$\Rightarrow x = 3$$

**Q5.** A jar contains 24 marbles, some are green and others are blue. If a marble is drawn at random from the jar, the probability that it is green is $\frac{2}{3}$. Find the number if blue balls in the jar.

**Ans.** Here, Total number of favourable outcomes = 24

Let there be $x$ green marbles.jJ

Therefore, Favourable number of outcomes = $x$

$\therefore$ P(G) = $\frac{x}{24}$

But P(G) = $\frac{2}{3}$

$\therefore \frac{x}{24} = \frac{2}{3}$

$\Rightarrow x = 16$

Therefore, number of green marbles are 16

And number of blue marbles = 24 – 16 = 8

********** END **********