

CHAPTER 15

Probability

Example:

A bag contains 14 balls of which 'x' are white. If 6 more white balls are added to the bag. The probability of

drawing a white ball is $\frac{1}{2}$. Find the value of 'x'.

Sol.

Total balls in the bag = 14

Number of white balls = x

Now, 6 more white balls are added to the bag $\Rightarrow$

Number of white balls = $x + 6$

(And)

Total balls in the bag = $14 + 6 = 20$

Let 'S' be the sample space that bag contains balls $\Rightarrow$

$n(S) = 20$

Let 'E' be the event of getting that drawing a white ball

$n(E) = x + 6$

$$\therefore P(E) = \frac{n(E)}{n(S)} = \frac{x+6}{20}$$

But $P(E) = \frac{1}{2}$ ($\therefore$ Given)

$$\Rightarrow \frac{x+6}{20} = \frac{1}{2} \Rightarrow 2(x+6) = 1 \times 20$$

$$\Rightarrow (x+6) = \frac{1 \times 20}{2}$$

$$\Rightarrow x = 10 - 6 = 4$$

$$\therefore \boxed{x = 4}$$

