

Assignment 1

AI1110: Probability and Random Variables
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10.15.2.5: Question. 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 of blue balls in the jar.

Answer: 8.

Solution: Given that the total number of marbles in the jar is 24. Let, the number of Blue marbles in the bag be x and the number of Green marbles in the bag be y . So, we have

$$x + y = 24 \quad (1)$$

Let, The Probability of drawing a 'A' coloured marble is $\Pr(A)$. So,

$$\Pr(A) = \frac{\text{Total number of 'A' coloured marbles}}{\text{Total number of marbles}}$$

We know that the probability of drawing a Green marble is $\frac{2}{3}$.

$$\Pr(\text{Green}) = \frac{2}{3}$$

$$\frac{y}{24} = \frac{2}{3} \quad (2)$$

Multiplying both sides by 24, we get:

$$y = 16 \quad (3)$$

Now we can substitute this value of y in equation (1) to get:

$$x + 16 = 24 \quad (4)$$

Subtracting 16 from both sides, we get:

$$x = 8 \quad (5)$$

Therefore, There are 8 Blue marbles in the jar.