

# Assignment 2

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Download all python codes from

[https://github.com/pranav-159/  
ai1103\\_Probability\\_and\\_Random\\_variables/  
blob/main/Assignment\\_2/codes/  
experimental\\_verification\\_5.23.py](https://github.com/pranav-159/ai1103_Probability_and_Random_variables/blob/main/Assignment_2/codes/experimental_verification_5.23.py)

and latex-tikz codes from

[https://github.com/pranav-159/  
ai1103\\_Probability\\_and\\_Random\\_variables/  
blob/main/Assignment\\_2/Assignment2.tex](https://github.com/pranav-159/ai1103_Probability_and_Random_variables/blob/main/Assignment_2/Assignment2.tex)

## 1 PROBLEM(5.23)

A box contains 3 blue, 2 white, and 4 red marbles. If a marble is drawn at random from the box, what is the probability that it will be (i) white? (ii) blue? (iii) red?

## 2 SOLUTION(5.23)

Let the random variable  $X=\{0,1,2\}$  represent the marble being blue,white,red.

As box contain a total of 9 balls and picking any

Color	X	n(X)
blue	0	3
white	1	2
red	2	4

ball is equally likely using the definition of classical probability

$$\Pr(X = 1) = \frac{n(X = 1)}{9} = \frac{2}{9} \quad (2.0.1)$$

$$\Pr(X = 0) = \frac{n(X = 0)}{9} = \frac{3}{9} \quad (2.0.2)$$

$$\Pr(X = 2) = \frac{n(X = 2)}{9} = \frac{4}{9} \quad (2.0.3)$$