Answer on Question #51598 – Math – Statistics and Probability

Question

Three balls are drawn from a box containing 6 red marbles, 4 white marbles and 5 blue marbles. Find the probability that they are drawn in the order: red, white, and blue if each ball is drawn with replacement.

a) $\dfrac{8}{225}$

b) $\dfrac{1}{225}$

c) $\dfrac{4}{225}$

d) $\dfrac{6}{225}$.

Solution

The probability to draw a red marble is equal to $\dfrac{6}{6+4+5} = \dfrac{6}{15} = \dfrac{2}{5}$. You then put that red marble back into the box. The probability to draw a white marble is equal to $\dfrac{4}{15}$. You then put that white marble back into the box. The probability to draw a blue marble is equal to $\dfrac{5}{15} = \dfrac{1}{3}$. Since each ball is drawn with replacement and these three events are independent, we use the multiplication rule. The required probability is equal to $P = \dfrac{2}{5} \cdot \dfrac{4}{15} \cdot \dfrac{1}{3} = \dfrac{8}{225}$.

Answer: a) $\dfrac{8}{225}$.