

Answer on Question #46331 – Math – Statistics and Probability

Question.

Amir, Waseem, Afridi, and Akhtar play the following game. Each man takes one of four balls numbered 1 through 4 from a jug. The man who draws ball 4 loses. The other three return their balls to the jug and draw again. Now the one who draws ball 3 loses. The other two return their balls to the jug and draw again. The man who draws ball 1 wins the game.

i) What is the probability that Akhtar does not lose in the first two draws?

ii) What is the probability that Afridi wins the game?

Solution.

i) In the first draw Akhtar can take the balls 1, 2 and 3. The probability of this event is equal to $\frac{3}{4}$. In the second draw Akhtar can take the balls 1 and 2. The probability of this event is equal to $\frac{2}{3}$.

We shall use the rule of multiplication to find the required probability: $P = \frac{3}{4} \cdot \frac{2}{3} = \frac{1}{2}$.

ii) In the first draw Afridi can take the balls 1, 2 and 3. The probability of this event is equal to $\frac{3}{4}$. In the second draw Afridi can take the balls 1 and 2. The probability of this event is equal to $\frac{2}{3}$. In

the third draw Afridi can take the ball 1 only. The probability of this event is equal to $\frac{1}{2}$. We shall use the rule of multiplication to find the required probability: $P = \frac{3}{4} \cdot \frac{2}{3} \cdot \frac{1}{2} = \frac{1}{4}$.

Answer.

i) $\frac{1}{2}$

ii) $\frac{1}{4}$