

Answer on Question #60028 – Math – Statistics and Probability

Question

Find the mean of the probability distribution of "number of sixes" in two tosses of unbiased dice ?

Solution

The probability to receive two sixes equals

$$P(X = 2) = \frac{1}{6} \cdot \frac{1}{6} = \frac{1}{36}.$$

The probability to receive one six equals

$$P(X = 1) = \frac{1}{6} \cdot \frac{5}{6} + \frac{5}{6} \cdot \frac{1}{6} = \frac{10}{36}.$$

The probability to receive no sixes equals

$$P(X = 0) = \frac{5}{6} \cdot \frac{5}{6} = \frac{25}{36}.$$

Thus, the mean of the probability distribution of number of sixes in two tosses of unbiased dice equals

$$E(X) = 2 \cdot P(X = 2) + 1 \cdot P(X = 1) + 0 \cdot P(X = 0) = 2 \cdot \frac{1}{36} + 1 \cdot \frac{10}{36} + 0 \cdot \frac{25}{36} = \frac{12}{36} = \frac{1}{3}.$$

Answer: $\frac{1}{3}$.