Evaluation 6

Evaluation 6 Problem 1

1.0/1.0 point (graded)

Suppose you roll a pair of fair dice 10 times. What's the probability that you'll roll a "7" exactly twice? *Choose the best answer.*

- $\binom{10}{2} \times \left(\frac{1}{7}\right)^2 \times \left(\frac{6}{7}\right)^8$
- $\binom{10}{7} \times \left(\frac{1}{6}\right)^2 \times \left(\frac{5}{6}\right)^8$
- $\binom{10}{2} \times \left(\frac{1}{6}\right)^2 \times \left(\frac{5}{6}\right)^8$ ✔
- $\binom{10}{2} \times \left(\frac{1}{6}\right)^8 \times \left(\frac{5}{6}\right)^2$

Submit You have used 1 of 2 attempts

Answers are displayed within the problem

Evaluation 6 Problem 2

1.0/1.0 point (graded)

Say you roll a fair die 10 times. Which of the following is most likely? *Choose the best answer.*

- You roll no "6s."

- You roll exactly one "6." ✔
- You roll exactly two "6s."
- You roll exactly three "6s."

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Answers are displayed within the problem

Evaluation 6 Problem 3

1.0/1.0 point (graded)

Let's say that the Boston Red Sox, an American baseball team, are playing a seven-game series with the Chicago Cubs, another American baseball team. The Red Sox (being the better team) will win games against the Cubs, on average, 60% of the time. What is the likelihood that the Red Sox will win exactly five games of the seven games? *Choose the best answer.*

- $\binom{5}{2} \times \left(\frac{3}{5}\right)^5 \times \left(\frac{2}{5}\right)^2$
- $\binom{7}{5} \times \left(\frac{3}{5}\right)^5 \times \left(\frac{2}{5}\right)^2$ ✔
- $\binom{7}{2} \times \left(\frac{2}{5}\right)^5 \times \left(\frac{5}{7}\right)^2$
- $\binom{7}{3} \times \left(\frac{2}{7}\right)^8 \times \left(\frac{5}{7}\right)^2$

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Evaluation 6 Problem 4

1.0/1.0 point (graded)

Suppose now that the Red Sox are in the World Series against the Cubs; that is, they play until one team wins four games. What is the likelihood that the Red Sox will win the World Series? Again, assume that the Red Sox will win games against the Cubs, on average, 60% of the time. *Choose the best answer.*

- $\left(\frac{2}{5}\right)^7 + \binom{7}{1} \times \left(\frac{2}{5}\right)^6 \times \left(\frac{3}{5}\right) + \binom{7}{2} \times \left(\frac{2}{5}\right)^5 \times \left(\frac{3}{5}\right)^2 + \binom{7}{3} \times \left(\frac{2}{5}\right)^4 \times \left(\frac{3}{5}\right)^3$
- $\binom{7}{4} \times \left(\frac{3}{5}\right)^4 \times \left(\frac{2}{5}\right)^3$
- $\frac{\left(\frac{3}{2}\right)^4 - 1}{\left(\frac{3}{2}\right)^7 - 1}$
- $\left(\frac{3}{5}\right)^7 + \binom{7}{1} \times \left(\frac{3}{5}\right)^6 \times \left(\frac{2}{5}\right) + \binom{7}{2} \times \left(\frac{3}{5}\right)^5 \times \left(\frac{2}{5}\right)^2 + \binom{7}{3} \times \left(\frac{3}{5}\right)^4 \times \left(\frac{2}{5}\right)^3$ ✔

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Answers are displayed within the problem

Evaluation 6 Problem 5

1.0/1.0 point (graded)

Finally, suppose again that the Red Sox are in the World Series against the Cubs, but they've changed the rules: the two teams play until one team is ahead of the other by four games. Now what's the likelihood of a Red Sox victory? Again, assume that the Red Sox will win games against the Cubs, on average, 60% of the time. *Choose the best answer.*

- $\frac{\left(\frac{2}{3}\right)^4 - 1}{\left(\frac{2}{3}\right)^7 - 1}$

- $\frac{\left(\frac{2}{3}\right)^4-1}{\left(\frac{2}{3}\right)^8-1}$ ✔
- $\frac{\left(\frac{3}{2}\right)^4-1}{\left(\frac{3}{2}\right)^8-1}$
- $\frac{\left(\frac{3}{2}\right)^7-1}{\left(\frac{3}{2}\right)^8-1}$

Submit You have used 1 of 2 attempts

Answers are displayed within the problem

Evaluation 6 Problem 6

1.0/1.0 point (graded)

In tennis, if two players are tied $\mathbf{3}$-$\mathbf{3}$ after six points, they continue to play until one player is ahead of the other by two points; that player then wins the game.

Suppose that Nathan and Carl are playing tennis, and that Nathan will win a point over Carl on average $\mathbf{2/3}$ of the time. If they're tied at $\mathbf{3}$-$\mathbf{3}$, what is the probability that Carl will win? *Choose the best answer.*

- $\frac{\left(\frac{1}{2}\right)^2-1}{\left(\frac{1}{2}\right)^4-1}$ ✔
- $\frac{\left(\frac{1}{2}\right)^3-1}{\left(\frac{1}{2}\right)^5-1}$

- $\frac{\left(\frac{1}{3}\right)^2-1}{\left(\frac{1}{3}\right)^4-1}$
- $\frac{\left(\frac{2}{3}\right)^3-1}{\left(\frac{2}{3}\right)^6-1}$

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Answers are displayed within the problem

Evaluation 6 Problem 7

1.0/1.0 point (graded)

Let's say Nathan and Carl are playing dice. They roll one die; if it comes up "6," Nathan pays Carl $\$5$, and if it comes up anything but "6," Carl pays Nathan $\$1$. Let's say they play 11 times. What are the odds that Nathan will be ahead at the end? *Choose the best answer.*

- $\frac{1}{2}$
- $11 \times \frac{5}{6}$
- $\left(\frac{5}{6}\right)^{11} + 11 \times \left(\frac{5}{6}\right)^{10} \times \left(\frac{1}{6}\right)$ ✔
- $\left(\frac{1}{6}\right)^{11} + 11 \times \left(\frac{1}{6}\right)^{10} \times \left(\frac{5}{6}\right)$

Submit You have used 1 of 2 attempts

Answers are displayed within the problem

Evaluation 6 Problem 8

1.0/1.0 point (graded)

Main Street in Middletown runs north-south a total of ten blocks, with a restaurant at each end: Ani's Taqueria on the north end and Ramen House at the south end. You're standing in the middle, five blocks from each, and are in need of a meal.

You can't decide which way to go, so you decide to leave it up to the fates. Specifically, you decide that you'll roll one die; if it comes up between "**1**" and "**4**," then you'll walk one block north, and if it comes up "**5**" or "**6**," you'll walk one block south. You repeat this until you arrive at one or the other restaurant. What are the odds that you'll wind up at the Ramen House? *Choose the best answer.*

- $\frac{992}{1{,}023}$
- $\frac{31}{1{,}023}$ ✔
- $\frac{1{,}023}{31}$
- $\frac{1}{2}$

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Answers are displayed within the problem

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