

- Two urns each contain blue balls and yellow balls. Urn I contains 3 blue balls and 4 yellow balls and Urn II contains 5 blue balls and 6 yellow balls. A ball is drawn from each urn. What is the probability that both balls are blue?
[A] $\frac{24}{77}$ [B] $\frac{15}{77}$ [C] $\frac{8}{77}$ [D] $\frac{10}{77}$
- Three students are chosen at random. Find the probability that all three were born on Wednesday.
[A] $\frac{1}{21}$ [B] $\frac{3}{7}$ [C] $\frac{3}{365}$ [D] $\frac{1}{343}$
- A bag contains 2 yellow marbles and 5 red marbles. Two marbles are drawn at random. One marble is drawn and not replaced. Then a second marble is drawn. What is the probability that the first marble is red and the second one is yellow?
[A] $\frac{5}{2}$ [B] $\frac{1}{5}$ [C] $\frac{5}{21}$ [D] $\frac{5}{42}$
- A drawer contains 5 red socks, 7 white socks, and 4 blue socks. Without looking, you draw out a sock and then draw out a second sock without returning the first sock. What is the probability that the first sock and the second sock are both red?
[A] $\frac{1}{16}$ [B] $\frac{1}{20}$ [C] $\frac{1}{12}$ [D] $\frac{25}{256}$
- Four cards are drawn at random without replacement from a standard deck of 52 cards. Find P(4 diamonds).
[A] $\frac{1}{256}$ [B] $\frac{11}{4,165}$ [C] $\frac{4}{13}$ [D] $\frac{1}{13}$
- The probability of rain on Monday is 0.1. The probability of rain on Tuesday is 0.8. What is the probability of rain on both Monday and Tuesday?
- In a game, you choose a card from a box containing 4 red cards, 6 blue cards, and 5 yellow cards. You replace the first card in the box and then choose again. What is the probability of choosing a red or blue card and then choosing a blue or yellow card?
- A coin is tossed and a die is rolled. What is the probability that the coin shows tails and the die shows a 3?
- A coin is tossed and a number cube is rolled. What is the probability that the coin shows heads and the number cube shows an odd number?
- Two urns each contain green balls and yellow balls. Urn I contains three green balls and three yellow balls and Urn II contains five green balls and five yellow balls. A ball is drawn from each urn. What is the probability that both balls are yellow?
- In a game, you choose a card from a box containing 4 red cards, 6 blue cards, and 5 yellow cards. You do not replace the first card in the box before choosing again. What is the probability of choosing a blue card and then choosing a yellow card?

12. A and B are independent events. [A] $\frac{23}{9}$ [B] $\frac{2}{15}$ [C] $\frac{2}{5}$ [D] $\frac{5}{18}$
 $P(B) = \frac{5}{6}$, $P(A \text{ and } B) = \frac{1}{3}$. Find $P(A)$.

13. A and B are independent events.
 $P(A) = \frac{2}{3}$, $P(A \text{ and } B) = \frac{2}{7}$. Find $P(B)$.

14. Compare the quantities in Column A and Column B.

Column A $P(B)$ if A and B are independent, Column B $P(B \text{ after } A)$ if A and B are dependent,

$$P(A \text{ and } B) = \frac{1}{4}, \text{ and } P(A) = \frac{1}{2}. \quad P(A) = \frac{1}{2}.$$

[A] The quantity in Column A is greater. [B] The quantity in Column B is greater.

[C] The quantities are equal.

[D] The relationship cannot be determined from the information given.

15. In a game using the chart below, you earn points if you toss heads in accordance with choice A, B or C. If you choose A and you toss two heads, you earn four points. If you choose B and toss two heads and a tail, you earn zero points. Each choice you make counts as one turn. How would you use the probability of tossing consecutive heads to determine the choice of A, B or C to earn points, while taking the lowest number of turns?

All Heads	Points Given
(A) 2 tosses	4
(B) 3 tosses	6
(C) 4 tosses	10

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[1] B

[2] D

[3] C

[4] C

[5] B

[6] 0.08

[7] $\frac{22}{45}$

[8] $\frac{1}{12}$

[9] $\frac{1}{4}$

[10] $\frac{1}{4}$

[11] $\frac{1}{7}$

[12] C

[13] $\frac{3}{7}$

[14] D

Answers may vary, but should indicate that Choice A will yield the highest number of points in the long run. Choice A has a $\frac{1}{4}$ probability to earn four points. Choice B has a $\frac{1}{8}$ probability to earn six points, and Choice

[15] C has a $\frac{1}{16}$ probability to earn ten points.