LESSON 11-5 Practice A

Probability of Independent and Dependent Events

Decide if each set of events is independent or dependent. Explain your answer.

1. A student spins a spinner and rolls a number cube.

   Independent; Spinning a spinner does not affect the outcome of rolling a number cube.

2. A student picks a raffle ticket from a box and then picks a second raffle ticket without replacing the first raffle ticket.

   Dependent; There are fewer raffle tickets in the box for the second ticket picked.

Find the probability of each set of independent events. Choose the letter for the best answer.

3. drawing a black checker from a bag of 6 black checkers and 4 red checkers, replacing it, and drawing another black checker

   A $\frac{2}{3}$ C $\frac{2}{5}$

   (B) $\frac{9}{25}$ D $\frac{3}{5}$

4. rolling a six on the first roll of a 1–6 number cube and rolling an odd number on the second roll of the same cube

   (F) $\frac{1}{12}$ H $\frac{1}{6}$

   G $\frac{1}{8}$ J $\frac{1}{2}$

5. flipping a tail on a coin and spinning a 5 on a spinner with sections of equal area numbered 1–5

   A $\frac{1}{2}$ C $\frac{1}{7}$

   B $\frac{1}{5}$ (D) $\frac{1}{10}$

6. drawing a 1, 2, or 3 from 9 cards numbered 1–9, replacing the card, and drawing a 7, 8, or 9

   F $\frac{1}{3}$ (H) $\frac{1}{9}$

   G $\frac{3}{8}$ J $\frac{1}{12}$

Solve.

7. There are 4 black marbles and 2 white marbles in a bag. What is the probability of choosing a black marble, not replacing it, then choosing a white marble?

   $\frac{4}{15}$

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LESSON 11-5 Practice B

Probability of Independent and Dependent Events

Decide if each set of events is independent or dependent. Explain your answer.

1. A student spins a spinner and chooses a Scrabble® tile

   Independent; Spinning a spinner does not affect the outcome of choosing a Scrabble® tile.

2. A boy chooses a sock from a drawer of socks, then chooses a second sock without replacing the first.

   Dependent; There are fewer socks in the drawer for the second sock picked.

3. A student picks a raffle ticket from a box, replaces the ticket, then picks a second raffle ticket.

   Independent; There are the same number of raffle tickets in the box for the second ticket picked.

Find the probability of each set of independent events.

4. drawing a red checker from a bag of 9 black checkers and 6 red checkers, replacing it, and drawing another red checker

   $\frac{4}{25}$

5. drawing a black checker from a bag of 9 black checkers and 6 red checkers, replacing it, and drawing a red checker

   $\frac{6}{25}$

6. rolling a 1, 2, or 3 on the first roll of a 1–6 number cube and rolling a 4, 5, or 6 on the second roll of the same cube

   $\frac{1}{4}$

Solve.

7. Randy has 4 pennies, 2 nickels, and 3 dimes in his pocket. If he randomly chooses 2 coins, what is the probability that both are dimes?

   $\frac{1}{12}$

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LESSON 11-5 Practice C

Probability of Independent and Dependent Events

Decide if each set of events is independent or dependent. Explain your answer.

1. A student spins an even number on a spinner and then spins another even number on the second spin.

   Independent; The first spin does not affect the outcome of the second spin.

2. A student guesses on two multiple choice questions.

   Independent; Each question is a separate event.

Find the probability of each set of independent events.

3. drawing a brown sock from a drawer of 4 brown socks, 10 black socks, and 6 gray socks, replacing it, then drawing a gray sock

   $\frac{3}{50}$

4. drawing a pair of black socks from a drawer of 4 brown socks, 10 black socks, and 6 gray socks

   $\frac{9}{38}$

Solve.

5. Calista has 4 one-dollar bills, 2 five-dollar bills, and 3 ten-dollar bills in her wallet. If she randomly chooses 2 bills from her wallet, what is the probability that both are five dollar bills?

   $\frac{1}{36}$

6. There are 10 true/false questions on a test. You do not know the answer to 4 of the questions, so you guess. What is the probability that you will get all 4 answers right?

   $\frac{1}{16}$

7. There are 12 students in the After-School Club. Three names are being drawn at random to help with the school carnival. What is the probability that Jess, Sandy, and Phil will be chosen?

   $\frac{1}{220}$

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LESSON 11-5 Reteach

Probability of Independent and Dependent Events

Events are *independent* when the outcome of one event has no effect on the outcome of a second event. Rolling a number cube and flipping a coin are **independent events.**

Find the probability of rolling a 4 and flipping heads.

1. There are 6 outcomes for the number cube and 2 outcomes for the coin.
2. Using the Fundamental Counting Principle, there are 6 × 2, or 12, possible outcomes of rolling a number cube and flipping a coin.
3. Make a list of the possible outcomes:

   (1, H), (2, H), (3, H), (4, H), (5, H), (6, H), (1, T), (2, T), (3, T), (4, T), (5, T), (6, T)

   How many possible ways are there of rolling a 4 and flipping heads? 1

4. P(4 and heads) = $\frac{\text{number of ways 4 and heads can occur}}{\text{number of possible outcomes}} = \frac{1}{12}$

Events are *dependent* when the outcome of one event does have an effect on the outcome of the next event. Drawing two marbles in a row from a bag without replacing the first marble are **dependent events.**

A bag contains 3 blue and 5 red marbles. Find the probability of drawing 2 blue marbles in a row without replacing the first marble.

5. The total number of marbles in the bag is 8. There are 3 blue marbles in the bag. P(blue marble on first draw) = $\frac{3}{8}$
6. There are now 7 marbles in the bag. If you drew a blue marble on the first draw, there are 2 blue marbles left in the bag.

   P(blue marble on second draw) = $\frac{2}{7}$

7. P(blue, blue) = P(blue on 1st draw) × P(blue on 2nd draw) = $\frac{3}{8} \times \frac{2}{7} = \frac{3}{28}$

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