

# Practice 9-7

## Probability of Multiple Events

**Integers from 1 to 100 are randomly selected. State whether the events are mutually exclusive.**

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|-------------------------------------|---|
| 1. Even integers and multiples of 3 | 2. Integers less than 40 and integers greater than 50 |
| 3. Odd integers and multiples of 4  | 4. Integers less than 50 and integers greater than 40 |

**Classify each pair of events as *dependent* or *independent*.**

- A member of the junior class and a second member of the same class are randomly selected.
- A member of the junior class and a member of another class are randomly chosen.
- An odd-numbered problem is assigned for homework, and an even-numbered problem is picked for a test.
- The sum and the product of two rolls of a number cube

**Find each probability.**

- A flavored-water company wants to know how many people prefer its new lemon-flavored water over two competitors' brands. The company hires you to survey 1000 people and ask them to rank the three drinks in order of preference. After conducting the survey, you find that 35% prefer the lemon-flavored water over Competitor A, 38% prefer the lemon-flavored water over Competitor B, and 47% did not prefer the lemon-flavored water over either competitor's brand. What is the probability that someone prefers the lemon-flavored water over both competitors' brands?

- A natural number from 1 to 10 is randomly chosen.
 

|   |                                    |
|---|------------------------------------|
| a. $P(\text{even or } 7)$                               | b. $P(\text{even or odd})$         |
| c. $P(\text{multiple of } 2 \text{ or multiple of } 3)$ | d. $P(\text{odd or less than } 3)$ |
- A standard number cube is tossed.
 

|                            |   |
|----------------------------|---|
| a. $P(\text{even or } 3)$  | b. $P(\text{less than } 2 \text{ or even})$ |
| c. $P(\text{prime or } 4)$ | d. $P(2 \text{ or greater than } 6)$        |
- Only 93% of the airplane parts Salome is examining pass inspection. What is the probability that all of the next five parts pass inspection?
- There is a 50% chance of thunderstorms the next three days. What is the probability that there will be thunderstorms each of the next three days?

**$Q$  and  $R$  are independent events. Find  $P(Q \text{ and } R)$ .**

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|--|------------------------------|--|
| 14. $P(Q) = \frac{1}{8}, P(R) = \frac{2}{5}$ | 15. $P(Q) = 0.8, P(R) = 0.2$ | 16. $P(Q) = \frac{1}{4}, P(R) = \frac{1}{5}$ |
|--|------------------------------|--|

**$M$  and  $N$  are mutually exclusive events. Find  $P(M \text{ or } N)$ .**

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|--|--------------------------------|---------------------------------------|
| 17. $P(M) = \frac{3}{4}, P(N) = \frac{1}{6}$ | 18. $P(M) = 10\%, P(N) = 45\%$ | 19. $P(M) = \frac{1}{5}, P(N) = 18\%$ |
|--|--------------------------------|---------------------------------------|