

# Assignment

## Write

Describe a conditional probability in your own words. Distinguish between independent and dependent events.

## Remember

Conditional probabilities are used to determine the probability of an event given that another event has already occurred and to determine whether or not events are independent. The conditional probability formula is  $P(B|A) = \frac{P(A \text{ and } B)}{P(A)}$ .

## Practice

- Suppose you have 3 nickels, 1 quarter, and 1 penny in your pocket. You choose a coin, do not replace it, and then choose a second coin.
  - Write an organized list to represent all of the possible outcomes.
  - What is the probability of randomly picking a penny first,  $P(\text{penny 1st})$ ?
  - What is the probability of picking a quarter first and a nickel second?
  - What is the probability of picking a nickel second, given that a quarter is picked first?
- Walt is selling candy outside the supermarket to raise money for new uniforms for the gymnastics team. The probability of a customer stopping to talk to Walt and buying some candy is  $\frac{2}{9}$ . The probability of a customer just stopping to talk to Walt is  $\frac{5}{12}$ . Fifty out of the 120 customers at the supermarket bought candy from Walt.
  - What is the probability of a customer buying candy from Walt given that they stopped to talk to him?
  - Are “a customer talking to Walt” and “a customer buying candy from Walt” independent or dependent events? Explain your reasoning.
- A survey was taken to determine the number of students that own a dog and a cat as a pet. When a student from the survey is chosen at random, the probability that the student owns both a dog and a cat is  $\frac{1}{12}$ . When a student is chosen at random, the probability that the student owns a dog is  $\frac{1}{4}$  and the probability the student owns a cat is  $\frac{1}{3}$ .
  - What is the probability that a student chosen at random who owns a dog also owns a cat?
  - Are “owning a dog” and “owning a cat” independent or dependent events? Explain your reasoning.

## Stretch

- A random sample of 100 females are surveyed about their shopping habits. Sixty reported using credit cards, and out of those females, 22 of them are less than thirty years old. Out of the females who do not use credit cards, 15 are thirty years old or older. Suppose a female is randomly chosen. Use the conditional probability formula to determine the probability that the female chosen uses a credit card, given that the female is older than thirty years old.

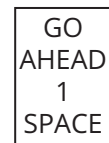
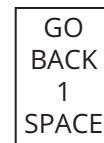
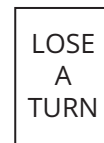
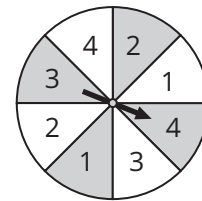
## Review

1. A survey was taken of 60 customers in a pet store to compare the number of pets owned by the shopper and the age of the shopper. The responses are shown in the table.

		Number of Pets			
		1	2	3	4
Age	20–39	6	7	4	2
	40–59	7	11	4	3
	60–79	8	5	2	1

Calculate each probability.

- A randomly chosen customer has 3 pets.
  - A randomly chosen customer has 2 pets and is aged 60–79.
2. A board game includes a spinner and a deck of cards. A player chooses a card from the deck and then chooses another card from the deck without replacing the first card. What is the probability that the first card chosen is “Go Ahead 1 Space” and the second card is “Pick a Card”?



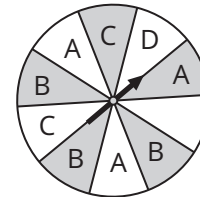
6 Cards

4 Cards

3 Cards

2 Cards

3. Consider the spinner shown in the figure. A player spins the spinner two times. What is the probability that the spinner will land on the letter A the first time or on the letter C the second time?



4. Use a trigonometric ratio to solve for the value of  $x$ . Round your answer to the nearest tenth.

