# Question Bank

Assign these questions as additional homework, or use them as review, quiz, or test questions.

1. A bag contains two green marbles, four yellow marbles, six blue marbles, and eight red marbles. Draws of marbles are made randomly.

   a. What is the probability of drawing a blue marble?

   b. What is the probability of not drawing a blue marble?

   c. If you double the number of green, yellow, blue, and red marbles in the bag, what will be the probability of drawing a blue marble?

   d. How does your answer to part (c) compare with your answer to part (a)? Explain.

   e. If you add two of each color to the original bag of marbles, what will be the probability of drawing a blue marble?

   f. How does your answer to part (e) compare with your answer to part (a)? Explain.

   g. How many blue marbles would you need to add to the original bag of marbles to make the probability of drawing a blue marble $\frac{1}{2}$?

2. A bag contains two red marbles and two white marbles.

   a. After a marble is drawn, it is replaced before the next draw. What is the probability that a red marble will be drawn twice in a row? Explain.

   b. If a marble is drawn and is not replaced before the second marble is drawn, what is the probability that two red marbles will be drawn? Explain.

3. Brianna and Emmanuel are given another chance to win prizes on the Gee Whiz Everyone Wins! game show. Brianna arranges three red marbles and three green marbles in two containers while Emmanuel is out of the room. Emmanuel will choose a container and draw out one marble. If he draws a red marble, the friends each win a prize. What arrangement of marbles in the container will give the friends the best chance of winning?

4. Kim spun a spinner 100 times and made a record of her results.

Outcome	Blue	Red
Number of times	86	14

a. Which spinner below did Kim most likely use? Explain.

Spinner A

Blue · Red

Spinner B

Red
Blue

Spinner C

Blue
Red

Spinner D

Red
Blue
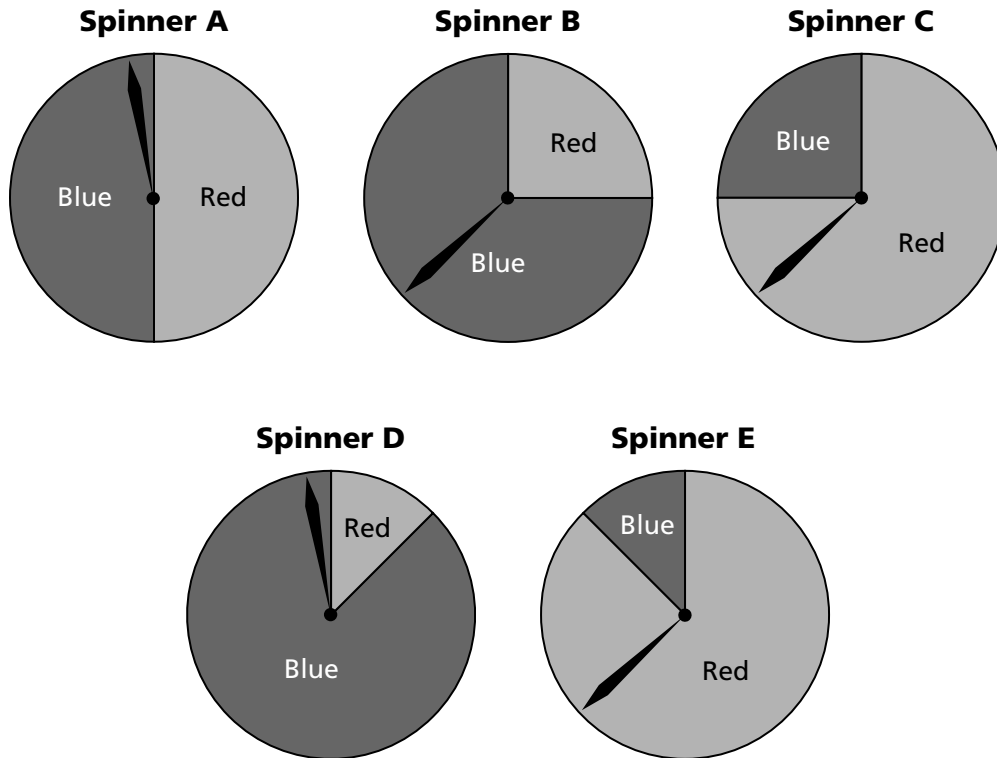
Spinner E

Blue
Red

b. If Kim spins Spinner B twice, what is the probability that she will get blue on both spins?

5. Many states run a lottery in which a three-digit number is chosen at random each day. To win, a player must guess what three-digit number will be drawn.

a. If each of the three digits can be 0 through 9, how many different numbers can be chosen?

b. If someone buys one ticket, what is the probability of winning on any one draw?

c. If the payoff on a $1 bet is $750, what could a player expect to win over the long run?

d. Are lotteries like this one fair games of chance? Why might a state run a game that is not fair to the players?

6. Kenisha created a new screen for the path game.
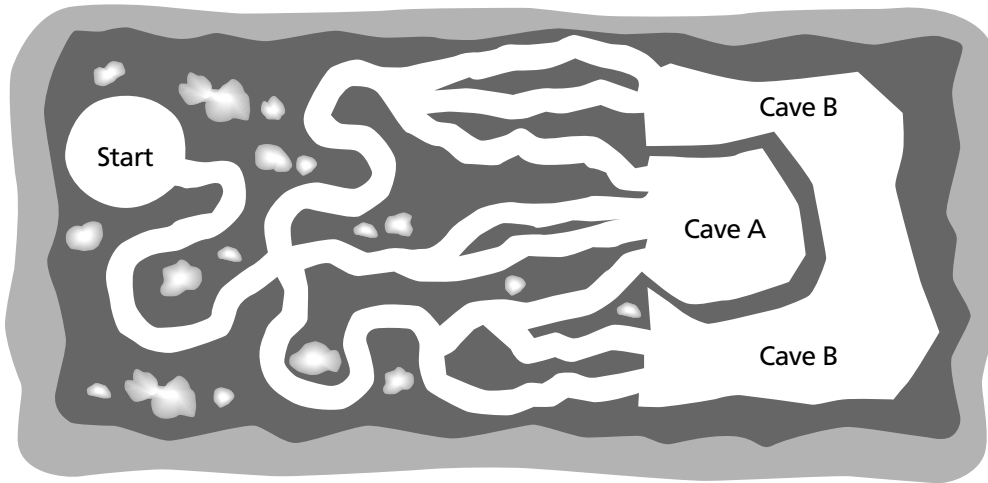
a. If Zark randomly selects a path at each fork, what is the theoretical probability that he will end in Cave A? End in Cave B?

b. If you played this game 72 times, how many times could you expect Zark to end in Cave A? End in Cave B?