

Additional Practice**Investigation 1****What Do You Expect?**

1. Josh is playing golf. He has 3 white golf balls, 4 yellow golf balls, and 1 red golf ball in his golf bag. At the first hole, he randomly draws a ball from his bag.
 - a. What is the probability that he draws a white golf ball?
 - b. What is the probability that he draws a red golf ball?
 - c. What is the probability that he draws a yellow golf ball?
 - d. On the sixth hole, Josh drives one of his white golf balls into a pond and has to draw another ball from his bag.
 - i. What is the probability that he draws a white golf ball?
 - ii. What is the probability that he draws a red golf ball?
 - iii. What is the probability that he draws a yellow golf ball?
 - e. Are the probabilities you found in parts (a)–(d) experimental probabilities or theoretical probabilities? Explain.

2. To help his 3-year-old sister Emily learn her colors, Kyle has put some yellow, green, red, and blue blocks in a bucket. Emily draws a block from the bucket, names its color, and puts the block back in the bucket. Then Kyle mixes the blocks, and Emily draws again. In playing this game 20 times, Emily draws a yellow block 6 times, a green block 2 times, a red block 8 times, and a blue block 4 times.
 - a. Based on Emily's draws, what is the probability of drawing a yellow block from the bucket?
 - b. What is the probability of drawing a green block from the bucket?
 - c. What is the probability of drawing a red block from the bucket?
 - d. What is the probability of drawing a blue block from the bucket?
 - e. Are the probabilities you found in parts (a)–(d) experimental probabilities or theoretical probabilities? Explain.

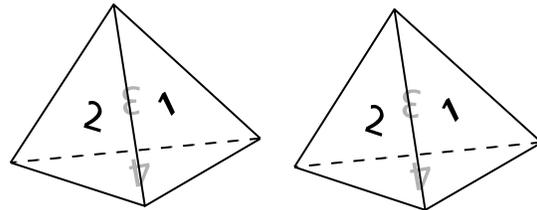
Additional Practice *(continued)*

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- f. There are a total of 10 blocks in the bucket. Based on the results of Emily's 20 draws, how many yellow, green, red, and blue blocks would you expect to be in the bucket? Explain.

3. A pyramid has four faces that are congruent equilateral triangles. The faces of a game piece that is a pyramid are labeled with the numbers 1, 2, 3, and 4. A roll of the game piece is determined by the number on the face the game piece lands on. Below are the rules of a game played with two such game pieces.



- Player I and Player II take turns rolling two 4-sided number cubes.
 - If the sum of the numbers rolled is odd, Player I gets a point.
 - If the sum of the numbers rolled is even, Player II gets a point.
 - The player with the most points after 32 rolls wins.
- a. Make a table that shows all the possible outcomes of rolling two 4-sided number cubes.
- b. What is the probability of rolling a sum of 5?
- c. What is the probability of rolling a sum of 4?
- d. What is the probability of rolling a sum of 7?
- e. Do you think the game is fair? Explain.
- f. Suppose that, in 32 rolls, a sum of 8 is rolled twice. Is this unusual? Explain.

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4. a. Juanita is holding five coins with a total value of 27 cents. What is the probability that three of the coins are pennies? Explain.
- b. What is the probability that one of the coins is a quarter? Explain.
5. Michelle flips a penny four times, and it lands heads up all four times. On her fifth flip, what is the probability that the penny will land tails up? Explain.
6. A standard deck of playing cards has 52 cards. The deck is divided into 4 suits: spades, hearts, diamonds, and clubs. There are 13 cards of each suit.
- a. If you randomly draw a card from a standard deck of playing cards, what is the probability that you will draw a heart?
- b. If you draw 12 cards, how many clubs could you expect to draw? Explain.
- c. If you remove all the diamonds from a deck of cards and then draw 12 cards, how many clubs could you expect to draw? Explain.
- d. Are the probabilities you found in parts (a)–(c) experimental probabilities or theoretical probabilities? Explain.
7. a. Sam started his own pizza shop. He has one kind of crust, one kind of sauce and six toppings: ground beef, pepperoni, onion, green peppers, mushrooms and fresh basil. How many different two-topping pizzas can he make?
- b. Sam soon decides to offer three kinds of sauce: regular, spicy and extra spicy. How many kinds of two-topping pizzas can he make with sauce?
- c. Finally, Sam decides to offer two kinds of crust: regular and whole-wheat. Now how many kinds of two-topping pizzas can he make?