Assignment

Write

How are tree diagrams useful when constructing probability models?

Remember

A **tree diagram** illustrates the possible outcomes of a given situation.

Practice

1. Dinah's family has 4 children. The birth order of the children is G, G, B, G. Create a tree diagram to list all the possible birth orders of a family of 4 children. Then determine the probability of Dinah's family birth order.
2. Kimberly is learning probability in middle school while her little brother, Rodney, is learning arithmetic in first grade. Kimberly uses a six-sided number cube to help Rodney learn how to add one-digit numbers. She rolls two cubes, numbered 1 through 6, and Rodney adds up the two numbers on the faces.
   a. Construct a tree diagram to determine all the possible outcomes. List the sum at the end of each branch of the tree.
   b. Construct a probability model for rolling 2 six-sided number cubes and determining the sum of the faces.
   c. What is the probability that the sum is 7?
   d. What is the probability that the sum is 11?
   e. Calculate the probability that the sum is an even number.
   f. Calculate the probability that the sum is greater than 5.
   g. What event would be complementary to the event that the sum is greater than 5? Explain your reasoning.
3. When Kimberly and Rodney finish their math homework, they go outside to shoot some hoops. On average, Kimberly makes half of all of the shots she takes.
   a. She shoots the basketball 4 times. Construct a tree diagram for all possible outcomes of the 4 shots.
   b. Construct the probability model.
   c. What is the probability she makes all 4 shots?
   d. Calculate the probability she makes 3 or more shots.
   e. Calculate the probability she makes 2 or more shots.

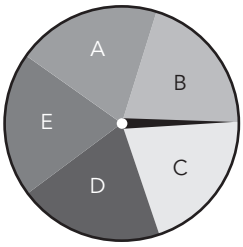
Stretch

Different colored beads are placed in two tin cups. The first cup contains 1 bead of each color: blue, purple, and green. The second cup contains 1 bead of each color: yellow, garnet, blue, and green.

1. What is the probability of choosing the same color from each cup?
2. What is the probability of choosing blue from the first cup or blue from the second cup?

Review

1. The spinner shown has 5 equal sections. Use the spinner to determine each probability.



   a. $P(\text{C}) =$
   b. $P(\text{vowel}) =$
   c. Suppose you spin twice.
      i. What is the probability of spinning two As?
      ii. What is the probability of spinning an A and a B?
2. In each table, x varies directly with y. Determine the constant of proportionality and express your answer as $y = kx$.

   a.

x	3	6	11	15
y	57	114	209	285

   b.

x	5	9	13	15
y	13	23.4	33.8	39