* State whether the events are independent or dependent.
  1. Choosing the color and size of a pair of shoes
  2. Choosing the winner and runner-up at a dog show
* Use the fundamental counting principle to find the number of different ways.

1. Lances math quiz has eight true-false questions. How many different choices for giving answers to the eight questions are possible?
2. Pizza Hut offers three different crusts, four sizes, and eight toppings. How many different ways can a customer order a pizza?
3. For a college application, Sarah must select one of five topics on which to write a short essay. She must also select a different topic from the list for a longer essay. How many ways can she choose the topics for the two essays?

* Evaluate combinations and permutations.

1. P(5, 3)
2. P(6,3)
3. C(4,2)
4. C(6,2)

* Determine whether each situation involve a permutation or a combination. Then find the number of possibilities.

1. Seven shoppers in line at a checkout counter.
2. An arrangement of the letters in the word *intercept*.
3. An arrangement of 4 blue tiles, 2 red tiles, and 3 black tiles in a row.

* Find the probability of independent and dependent events.  
  A die is rolled twice. Find each probability.

1. P(5, then 1)
2. P(two even numbers)

There are 8 action, 3 comedy, and 5 children’s DVDs on a shelf. Suppose two DVDs are selected at random from the shelf. Find each probability.

1. P(2 action DVDs), if replacement occurs
2. P(2 action DVDs), if no replacement occurs
3. P(a comedy DVD, then a children’s DVD), if no replacement occurs

Three cards are drawn from a standard deck of cards. Find each probability.

1. P(3 hearts), if replacement occurs
2. P(3 hearts), if no replacement occurs

Determine whether the events are *independent* or *dependent*. Then find the probability.

1. A black die and a white die are rolled. What is the probability that a 3 shows on the black die and a 5 shows on the white die?
2. Michelle has 4 black socks, 6 blue socks, and 8 white socks in her drawer. If she selects three socks at random with no replacement, what is the probability that she will first select a blue sock, then a black sock, then another blue sock?

* Find the probability of mutually exclusive and inclusive events.  
  A die is rolled. Find each probability.

1. P(1 or 6)
2. P(at least 5)
3. P(less than 3)
4. P(even or prime)
5. P(multiple of 3 or 4)
6. P(multiple of 2 or 3)

A card is drawn from a standard deck of cards. Determine whether the events are *mutually exclusive* or *inclusive*. Then find the probability.

1. P(6 or a king)
2. P(queen or a spade)
3. P(red or an ace)
4. P(an ace or an even number)