

Section 9-3 Independent, Mutually Exclusive and Overlapping Events

Independent Events when the outcome of one event does NOT influence the outcome of a second event

Mutually Exclusive Events—*either* one event *or* the other occurs, but not both

1. If there are 4 different types of bagels and 3 different types of cream cheese, how many ways can you buy one bagel and one cream cheese?

Counting Principle $n(A \text{ and } B) =$

2. A pizza restaurant offers 12 vegetable toppings and 5 meat toppings. Find the number of different ways you could select:
 - a) a meat topping and a vegetable topping
 - b) a meat topping or a vegetable topping

Counting Principle $n(A \text{ or } B)$

3. Jared brought 2 country CDs and 5 rap CDs to play for his math class.
 - a) How many different ways could he choose a country CD and then a rap CD?
 - b) How many different ways could he choose a country CD or a rap CD?
 - c) Mrs. Ancelet's CD player allows you to load four CDs at once. The CDs will play in the order you load them. How many different orderings of the four CDs are possible?
4. Suppose that you draw one card from a deck of 52 cards.
In how many different ways can you draw a heart or a face card?

Overlapping Events $n(A \text{ or } B) = n(A) + n(B) - n(A \cap B)$

5. Lexi's DVD collection includes 37 classic films and 29 comedies. Of these, 21 are classic comedies. How many DVDs does Lexi have that are classics or comedies?

6. The senior class has 367 girls and 425 students with brown hair. Of the girls, 296 have brown hair. In how many different ways could you select a girl or a brown-haired student from the senior class?

7. 9 people on a baseball team are trying to decide who will play each position.
 - a) In how many different ways could they select a person to be pitcher?
 - b) After someone has been selected as pitcher, in how many different ways could they select someone to be catcher?
 - c) In how many different ways could they select a pitcher and a catcher?
 - d) After the pitcher and catcher have been selected, in how many different ways could they select a first-baseman?
 - e) In how many different ways could they select a pitcher, catcher and first-baseman?
 - f) In how many different ways could all nine positions be filled?