

From the textbook (p. 131):

1. In how many ways can you arrange ten books on a shelf, choosing from among fifteen sitting on the floor?
2. In how many ways can you select from among eight people to fill the offices of vice president, secretary, and treasurer in an organization?
3. In how many ways can you choose ten books from among fifteen sitting on the floor?
4. In how many ways can you select a committee of four from among eight people?

For each experiment below, determine the number of possible outcomes (assumed to be equally likely). Then determine the number of outcomes in each event, and the probability of each event.

Experiment 1: Roll two standard dice.

Event A: The numbers shown on the two dice are equal.

Event B: The sum of the numbers on the dice is less than 5.

Experiment 2: Draw three cards from a standard deck (without replacement).

Event A: All three cards are aces.

Event B: All three cards are diamonds.

Event C: Two of the cards are kings, and the third is not a king.

Experiment 3: A bag contains 30 Scrabble tiles: one for each letter of the alphabet, and then four extra E's. Draw four tiles at random (without replacement).

Event A: Exactly one of the four tiles is a vowel (consider Y to be a consonant).

Event B: Exactly two of the four tiles are E's.

Event C: The four tiles spell the word BEST.

Experiment 4: A cage contains forty ping-pong balls, with the numbers 1 through 40 written on them. Select five balls at random (without replacement).

Event A: All five of the numbers drawn are even.

Event B: All five of the numbers drawn are greater than 20.

Event C: Three of the numbers drawn are 1, 2, and 3.

Experiment 5: A basket contains seven Mr. Goodbars, eight Krackel bars, five Special Dark chocolate bars, and nine Milk chocolate bars. Draw two bars from the basket (without replacement).

Event A: Exactly one of the two bars is a Krackel.

Event B: Both of the bars are Milk chocolate.

Event C: The two drawn bars are of the same kind.