Independent and Dependent Events

1. Are the events independent or dependent?

  a. Roll a die; toss a coin.

  b. Take a marble out of a bag; take a second marble out of a bag.

  c. Choose a person from a group of 50 persons. Choose another person from the same group.

  d. Draw a card from the deck and put it back. Draw a card again from the same deck.

2. You choose three objects at random, without putting them back in. What is the probability that...

  a. you get a heart, a tree, and an umbrella? (in this order)

  b. none of the objects is the heart?

  c. the first object is a fork?

3. Find all the probabilities in 2, assuming you DO put the objects back in.

4. You choose cards from a standard deck of cards, one at a time, without replacing them. What is the probability that...

  a. you get an ace, then a king?

  b. you get a heart, then a diamond?

  c. you get two hearts in a row?

  d. you get two kings in a row?

  e. you get three queens in a row?

  f. You get the king of diamonds, then the king of clubs?

  g. you get four aces in a row?

  h. you get a picture card, then not a picture card (1-10)?

5. Find all the probabilities in 4, assuming you DO put the objects back in.

6. Josh has 18 black socks and 12 white socks. Every morning he chooses one sock at random. After he has pulled that one sock out, he chooses another sock at random - and wears them!

  a. What is the probability that he first chooses a white sock, then a white sock?

  b. What is the probability that he first chooses a black sock, then a black sock?

  c. What is the probability that he first chooses a white sock, then a black sock?

  d. What is the probability that he first chooses a black sock, then a white sock?

  e. Therefore, what is the probability that he gets a pair (either two white or two black)?

  f. What is the probability that his socks are a mismatch?