Vocabulary

* Sample Space: ALL possible outcomes
* Independent Event: an event that DOES NOT change the possible outcomes (sample space)
* Dependent Event: an event that DOES change the possible outcomes (sample space)

Examples of Independent Events

Rolling a dice

Spinning a spinner

Anything with replacement

Examples of Dependent Events

Choosing a starting lineup

Anything without replacement

Example Questions

1. I have a bag of 4 blue marbles, 3 red marbles, and 1 yellow marble. Each time I pick a marble, I put it back in the bag.
   1. Is this an independent event or a dependent event?
   2. What is the probability that I choose a red marble?
   3. What is the probability that I choose a red marble, and then choose a yellow marble?
2. I have the same bag of marbles (4 blue, 3 red, 1 yellow), but this time when I choose a marble, I leave it on the table after I choose.
   1. Is this an independent event or a dependent event?
   2. What is the probability that I choose a red marble?
   3. What is the probability that I choose a red marble, and then choose a yellow marble?
   4. What is the probability that I choose a two blue marbles?
3. I draw cards from a standard deck of cards with replacement.
   1. Is this an independent event or dependent event?
   2. What is the probability that I draw a 3 of clubs?
   3. What is the probability that I choose a red card, and then a black card?
   4. What is the probability that I choose a face card, then an Ace, and then a 2?
4. I draw cards from a standard deck of cards without replacement.
   1. Is this an independent event or dependent event?
   2. What is the probability that I draw a 3 of clubs?
   3. What is the probability that I draw a red card?
   4. What is the probability that I choose a red card, and then a black card?
   5. What is the probability that I choose a face card, then an Ace, and then a 2?

Two events are independent if at least one of the following is true.

* You are told that the two events are independent.

Useful Formulas:

Example Questions

1. A and B are independent events. and
   1. Find
   2. Find
   3. Find
   4. Find
2. If and , are A and B independent events? Prove it.