

Name _____

The Dance of Probability: Independent and Dependent Events

Open-Ended Response Answer Key

1. Another analogy could be selecting cards from a deck. Drawing a card and then replacing it before drawing again represents independent events, as each draw is unaffected by the previous one. However, drawing cards without replacement represents dependent events, as the probability of each draw changes based on the previous outcomes.
2. Understanding independent and dependent events can help in decision-making. For instance, when planning a route to avoid traffic, understanding independent events can help predict the likelihood of encountering traffic lights turning red. In contrast, understanding dependent events might help in choosing the best time to go grocery shopping, considering factors like rush hour traffic affecting parking availability.
3. Sure! Let's consider tossing a fair coin twice. Each coin toss is an independent event because the outcome of the first toss, whether it's heads or tails, doesn't influence the outcome of the second toss. The probability of getting heads on the second toss remains $\frac{1}{2}$ regardless of the outcome of the first toss.
4. One situation could be planning a dinner menu for a party. If you know that some guests have dietary restrictions, such as being allergic to nuts, you need to consider dependent events. For example, if you plan to serve a salad with nuts and a dessert containing nuts, knowing about dependent events helps you avoid serving both dishes to prevent any allergic reactions among your guests.

