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Objectives

Find the probability of independent events.

Find the probability of dependent events.

Feb 2-9:46 AM

Adam's teacher gives the class two list of titles and asks each student to choose two of them to read. Adam can choose one title from each list or two titles from the same list.

Events are **independent events** if the occurrence of one event does not affect the probability of the other. Events are **dependent events** if the occurrence of one event does affect the probability of the other.

Feb 22-8:02 AM

How are independent events different from dependent events?

Tell whether each set of events is independent or dependent. Explain you answer.

A. You select a card from a standard deck of cards and hold it. A friend selects another card from the same deck.

Dep.

B. You flip a coin and it lands heads up. You flip the same coin and it lands heads up again.

Ind.

Feb 22-8:04 AM

Tell whether each set of events is independent or dependent. Explain you answer.

a. A number cube lands showing an odd number. It is rolled a second time and lands showing a 6.

Ind.

b. One student in your class is chosen for a project. Then another student in the class is chosen.

Dep.

Feb 22-10:59 AM

AND means MULTIPLY OR means ADD

Probability of Independent Events

If A and B are independent events, then $P(A \text{ and } B) = P(A) \cdot P(B)$.

An experiment consists of randomly selecting a marble from a bag, replacing it, and then selecting another marble. The bag contains 3 red marbles and 12 green marbles. What is the probability of selecting a red marble and then a green marble?

$P(\text{red, green}) = P(\text{red}) \cdot P(\text{green})$

$\frac{3}{15} \cdot \frac{12}{15}$ $12 \div 3$, $15 \div 3$

$\frac{1}{5} \cdot \frac{4}{5} = \frac{4}{25}$

Feb 22-8:05 AM

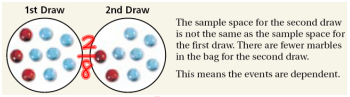
A coin is flipped 4 times. What is the probability of flipping 4 heads in a row.

$P(h, h, h, h) = P(h) \cdot P(h) \cdot P(h) \cdot P(h)$

$\frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2} = \frac{1}{16}$

Feb 22-8:05 AM

Suppose an experiment involves drawing marbles from a bag. Determine the theoretical probability of drawing a red marble and then drawing a second red marble *without replacing the first one*.



$\frac{3}{9}$ $\frac{2}{8}$

$\frac{1}{3} \cdot \frac{1}{4} = \frac{1}{12}$

To determine the probability of two dependent events, multiply the probability of the first event times the probability of the second event after the first event has occurred.

Probability of Dependent Events

If A and B are dependent events, then $P(A \text{ and } B) = P(A) \cdot P(B \text{ after } A)$.

Feb 22-8:06 AM

A snack cart has 6 bags of pretzels and 10 bags of chips. Grant selects a bag at random, and then Iris selects a bag at random. What is the probability that Grant will select a bag of pretzels and Iris will select a bag of chips?

$P(\text{pretzel and chip}) = P(\text{pretzel}) \cdot P(\text{chip after pretzel})$

Feb 22-8:07 AM

On your notecard write out the dice rolling chart...

Draw out all possible outcomes for rolling 2 dice

1,1	1,2				
		3,3			
				6,5	

1. What is the probability of rolling doubles?
2. What is the probability of rolling the sum of 8?
3. What is the probability of rolling a sum less than 4?

Feb 22-11:00 AM

Feb 5-10:10 AM