

Daily Agenda

Learning Targets: I can define conditional probability.
 I can find conditional probability using contingency tables.
 I can find conditional probability using tree diagrams.
 I can draw a tree diagram to model a situation.

Homework
10.3 Day 2 WS

Assessments
Unit 10 A Test - 5/5

Do not let what you cannot do interfere with what you can do.
-John Wooden

Nov 15-8:24 PM

10.3 Conditional Probability

Conditional Probability
The probability that an event will occur given that another event, A, has already occurred. Exists when the events are dependent.

P(B|A) means "the probability of event B, given event A"

Contingency Table
A two way frequency table. Contains data from two different categories. Can help find conditional probabilities.

Feb 9-11:33 AM

10.3 Conditional Probability

Conditional Probability
$P(B A) = \frac{P(A \text{ and } B)}{P(A)}$

Feb 9-11:33 AM

Example: Use the survey results to answer the following questions.

39% have a pet now and have had a pet. 61% do not have a pet now. 86% have had a pet. 14% do not have a pet now and have never had a pet.
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- Find the probability that a respondent has a pet, given that the respondent has had a pet.
- Find the probability that a respondent has never had a pet, given that the respondent does not have a pet now.

Mar 24-11:27 PM

Tree Diagram
Alternate way to represent a sample space. Way to information.

Here is a tree diagram for a coin toss.

- Two branches (heads and tails)
- Probability of each event written on branch.
- Outcome written at the end of branch.

May 1-8:44 AM

We can extend the tree diagram to show two tosses of a coin.

May 1-8:48 AM

How do you calculate the overall probabilities?

- We **multiply** the probabilities **along the branches**.
- We **add** the probabilities **down columns**.

May 1-8:49 AM

Example

A bag contains 4 red marbles and 6 yellow marbles. Draw a tree diagram that lists the possible outcomes of randomly selecting two marbles, **with replacement**. Find the probability of selecting two marbles that are different colors. $\frac{12}{25}$ or $.48$

May 1-8:57 AM

Example

A bag contains 4 red marbles and 6 yellow marbles. Draw a tree diagram that lists the possible outcomes of randomly selecting two marbles, **without replacement**. Find the probability of selecting two marbles that are different colors. $\frac{8}{15}$

May 1-8:57 AM

A school system compiled the following information from a survey it sent to people who were juniors 10 years earlier.

- 85% of the students graduated from high school
- Of the students who graduated high school, 90% are happy with their present jobs.
- Of the students who did not graduate from high school, 60% are happy with their present jobs.

What is the probability that a person from the junior class 10 years ago graduated from high school and is happy with present job? $\frac{76.5}{100}$

What is the probability that a person from the junior class 10 years ago did not graduate and is happy with present job? 9%

Apr 5-12:59 PM

Example

A football team has a 70% chance of winning when it doesn't snow, but only a 40% chance of winning when it snows. Suppose there is a 50% chance of snow. Make a tree diagram to find the probability that the team will win.

Apr 5-8:34 PM