

# Section Overview



## Introduction to Probability

Lesson 12-1

**Why?** Probability is used in making predictions, such as predictions about the weather.

Probabilities are written as fractions or decimals from 0 to 1 or percents from 0% to 100%. The higher an event's probability, the more likely that event is to happen.

**Probability** is the measure of how likely an event is to occur.

Probability	Likelihood
0%	Never happen
50%	Same chance of happening as of not happening
100%	Always happen

## Experimental Probability

Lesson 12-2

**Why?** Performing an experiment is one way to estimate the probability of an event.

Vocabulary	Definition	Example
Experiment	An activity involving chance that can have different results	Two coins are tossed.
Outcome	A result of an experiment	HT (H = heads, T = tails)
Sample space	The set of all possible outcomes	HH, HT, TH, TT
Experimental probability	$\frac{\text{Number of times event occurs}}{\text{Total number of trials}}$	If you toss two coins 100 times, and they both come up heads on 24 of those trials, then the experimental probability of both coming up heads, based on this experiment, is as follows: probability = $\frac{24}{100} = \frac{6}{25} = 0.24 = 24\%$ .

## Counting Methods and Theoretical Probability

Lessons 12-3, 12-4

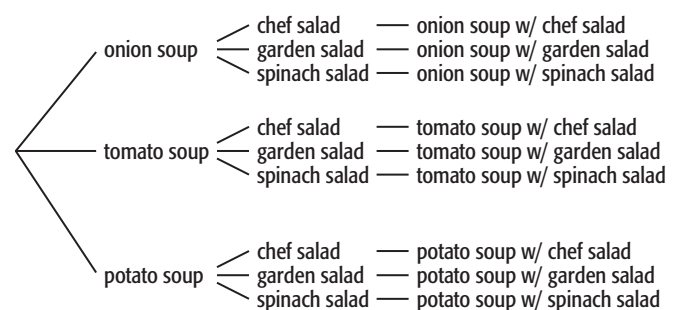
**Why?** Counting methods are ways to find the sample space, or all the possible outcomes of an experiment.

A tree diagram is one way to organize information.

Charles is having soup and salad for lunch. He can choose from onion, tomato, and potato soup. He can have a chef, garden, or spinach salad. How many different lunches could Charles have?

There are 9 different lunches that Charles could have.

One situation in which you can use theoretical probability is when all outcomes have the same chance of occurring, such as tossing fair coins or number cubes. In other words, the outcomes are equally likely.



### Theoretical Probability

$$\frac{\text{number of ways event can occur}}{\text{total number of possible outcomes}}$$