# *Unit 3-Probability

Content Area: **Mathematics**
Course(s):
Time Period: **Marking Period 2**
Length: **12 Blocks**
Status: **Published**

## Enduring Understandings

Probability is used in science, genetics, gaming, and a wide range of other fields.

Business underwriting uses probability as part of its foundation.

By learning and being exposed to the content int his chapter, students will have a better understanding of the world around them.

## Essential Questions

How is probbailty used outside of the filed of mathematics?

How is probability used in everyday life?

How does probability differ from odds?

## Content

**Essential Vocabulary**

- The nature of probability
- Theoretical probability
- Odds
- Expected Values
- Tree Diagrams
- Independent vs. Dependent Probability

## Skills

- Apply the Counting Principle to determine the number of ways to perform a sequence of experiments in a specified order.
- Construct a tree diagram to illustrate a sample space for an experiment and interpret the results.
- Find the number of permutations of n objects, taken r at a time and interpret the results in a practical context.
- Find the number of combinations of n objects, taken r at a time and interpret the results in a practical context.
- Apply both the empirical and theoretical approaches to probability to find the probability of an event.
- Given the probability of an event, A, determine the probability of its complement, not A, and explain the relationship between the two.
- Use the Addition Rule to find the probability that at least one of two events occurs, i.e. P(A or B).
- Identify and explain mutually exclusive events and use the Addition Rule with mutually exclusive events.
- Use Conditional Probability to find the probability of two successive events occurring.
- Differentiate finding probabilities when you have independent versus dependent events.
- Determine expectation in applications.

## Resources

Text: *A Survey of Mathematics with Applications, Perason 2005*

**Each skill is aligned to the text as a reference.**

Apply the Counting Principle to determine the number of ways to perform a sequence of experiments in a specified order. (12.1 )

Construct a tree diagram to illustrate a sample space for an experiment and interpret the results. (12.1)

Find the number of permutations of n objects, taken r at a time and interpret the results in a practical context. (12.2)

Find the number of combinations of n objects, taken r at a time and interpret the results in a practical context. (12.2)

Apply both the empirical and theoretical approaches to probability to find the probability of an event. (12.3)

Given the probability of an event, A, determine the probability of its complement, not A, and explain the relationship between the two. (12.4)

Use the Addition Rule to find the probability that at least one of two events occurs, i.e. P(A or B). (12.4)

Identify and explain mutually exclusive events and use the Addition Rule with mutually exclusive events.

(12.4)

Use Conditional Probability to find the probability of two successive events occurring. (12.5)

Differentiate finding probabilities when you have independent versus dependent events. (12.5)

Determine expectation in applications. (12.6)

http://anakamura.weebly.com/algebra-2-class-lecture-notes-q4.html

http://illuminations.nctm.org/Lesson.aspx?id=1145

http://www.math.uakron.edu/amc/Probability.htm