UNIT OF STUDY

Title: Probability	**Subject/Course**: Algebraic Connections	**Length:** 2 ½ weeks
Topic: CS 1 unit 2	**Grade:** 12th	**Designer:** Prado

UNIT GOALS AND EXPECTATIONS

IMPORTANT CONCEPTS/UNDERSTANDINGS:
♦ There are many ways to conduct and interpret simple probability
♦ Theoretical probability can be used to find some of the outcomes of daily life
♦ Experimental (empirical) probability can be found by observation in everyday life.
♦ Manipulatives can make probability easier to see and relate to life
♦ Simulations can allow for many items to be tested that may otherwise be dangerous to the test subjects

ESSENTIAL QUESTIONS:
♦ What is a manipulative?
♦ What are some examples of manipulatives?
♦ What is a simulation?
♦ How is a simulation set up and run?
♦ What is theoretical probability?
♦ What is experimental (empirical) probability?
♦ What is a compound event?
♦ When is an event mutually exclusive, inclusive, independent, or dependent?
♦ What is a Venn diagram and how is it used?
♦ What is a sample space?
♦ How can a tree diagram be used to determine theoretical possibilities?
♦ When conducting a particular experiment what are some possible outcomes? (roll a die, roll a pair of dice, flip coins, choosing a person or persons from a group of people, etc.)

STUDENT LEARNING EXPECTATIONS:
PS.1.AC.2 Conduct and interpret simple probability experiments using manipulatives (spinners, dice, cards, coins) and simulations (using random number tables, graphing calculators, or computer software)

PS.1.AC.3 Compute and display theoretical and experimental probability including the use of Venn diagrams 1)simple, 2)complementary, 3)compound (mutually exclusive, inclusive, independent and dependent events).

SPECIFIC DECLARATIVE KNOWLEDGE – What I know

♦ Explain vocabulary words: manipulatives, simulation, expected value, experiment, outcomes, event, probability, theoretical probability, experimental probability, simple events, equally likely events, complementary events, compound events, mutually exclusive events, inclusive events, independent events, dependent events, success, failure, random, odds, sample space, and Venn diagram.
♦ Know steps to conduct an experiment and simulation
♦ Identify an experimental and theoretical probability

♦ Identify simple, compound, and complimentary events ♦ Identify mutually exclusive events, inclusive events, independent events, and dependent events	

UNIT ASSESSMENTS **(Include tasks related to Dimensions 3 and 4 and Bloom's Taxonomy)**

Traditional Assessments: Unit 2 Exam Vocabulary Quiz Quizzes	**Other Evidence of Learning:** Homework Class work Getting Started Exercises

ACTIVITIES AND LEARNING EXPERIENCES	**Resources**
Using spinners and dice to conduct and interpret simple probability experiments ♦ S will learn vocabulary using the 4-step process (manipulatives, outcomes, sample space, probability, expected value, theoretical probability, experiment, experimental (empirical) probability, odds, success, failure, and event) ♦ S will do Getting Started activity sheet ♦ T will model theoretical and experimental probability with spinners and dice ♦ S will do in-class worksheet that will collect the data the students collect when using spinners and dice to work problems given out ♦ T will go over worksheets and review the process the students used to collect the data and the data collected and assign homework	♦ 4-step vocabulary sheets ♦ Getting Started problems ♦ Worksheets to write data collected using spinners and dice ♦ Spinners and dice
Using cards and coins to conduct and interpret simple probability experiments ♦ S will do Getting Started activity sheet ♦ T will model theoretical and experimental probability with cards and coins ♦ T will model writing a sample space or equally likely events ♦ S will use tree diagram to obtain sample space ♦ T will use sample space to determine probability of an event ♦ S will do in-class worksheet that will collect the data the students collect when using cards and coins to work problems given out ♦ T will go over worksheets and review the process the students used to collect the data and the data collected and assign homework	♦ Getting Started problems ♦ Worksheets to write data collected using cards and coins ♦ Cards and coins
Two and three way simulations conducted using random number tables ♦ S will learn vocabulary (random) ♦ S will do Getting Started activity sheet ♦ T will model two and three way simulations using random number tables and smart board ♦ S will do in-class worksheet that will collect the data the students collect when using random number tables and the problems given (some tables will be used from the internet with the smart board for the students) ♦ T will go over worksheets and review the process the students used to collect the data and the data collected and assign homework	♦ Getting Started problems ♦ Worksheets on two and three way simulations conducted using random number tables ♦ Random number tables ♦ Smartboard
Two and three way simulations conducted using programs on calculators	

♦ S will do Getting Started activity sheet ♦ T will model two and three way simulations using programs installed on calculators ♦ S will do in-class worksheet that will collect the data the students collect when using calculators and the problems given ♦ T will go over worksheets and review the process the students used to collect the data and the data collected and assign homework	♦ Getting Started problems ♦ Worksheets on two and three way simulations using program found on TI-83 calculators ♦ Calculators
Experimental (empirical) probability in simple and complimentary events ♦ S will learn vocabulary (simple event, complimentary event and Venn diagrams) ♦ S will do Getting Started activity sheet ♦ T will model experimental probability for a simple event and then for a complementary event with and without calculators and Venn diagrams ♦ S will do in-class worksheets on experimental probability for a simple event and complementary event (students will be required to use calculators, draw Venn diagrams, and no calculators to work problems) ♦ T will go over worksheets and review the process the students used to work the problems and assign homework	♦ Getting Started problems ♦ Worksheets on experimental probability in simple and complimentary events ♦ Calculators ♦ Smartboard
Theoretical probability in simple and complimentary events ♦ S will do Getting Started activity sheet ♦ T will model theoretical probability for a simple and complimentary event with and without calculators and Venn diagrams ♦ S will do in-class worksheets on theoretical probability for a simple and complementary event (students will be required to use calculators, Venn diagrams, and no calculators to work problems) ♦ T will go over worksheets and review the process the students used to work the problems and assign homework	♦ Getting Started problems ♦ Worksheets on theoretical probability in simple and complimentary events ♦ Calculators
Theoretical and experimental probability in compound events (2 and 3 mutually exclusive events) ♦ S will learn vocabulary (compound events and mutually exclusive events) ♦ S will do Getting Started activity sheet ♦ T will model theoretical and experimental probability in 2 and 3 mutually exclusive events using calculators, Venn diagrams, and no calculators ♦ S will do in-class worksheets on theoretical and experimental probability for 2 and 3 mutually exclusive events using calculators, Venn diagrams, and no calculators ♦ T will go over worksheets and review the process the students used to work the problems and assign homework	♦ Getting Started problems ♦ Worksheets on theoretical and experimental probability in compound events (2 and 3 mutually exclusive events) ♦ Calculators
Theoretical and experimental probability in compound events (2 and 3 inclusive events) ♦ S will learn vocabulary (inclusive events) ♦ S will do Getting Started activity sheet ♦ T will model theoretical and experimental probability in 2 and 3 inclusive events using calculators, Venn diagrams, and no calculators ♦ S will do in-class worksheets on theoretical and experimental probability for 2 and 3 inclusive events using calculators, Venn diagrams, and no calculators ♦ T will go over worksheets and review the process the students used to work the problems and assign homework	♦ Getting Started problems ♦ Worksheets on theoretical and experimental probability in compound events (2 and 3 inclusive events) ♦ Calculators

Theoretical and experimental probability in compound events (2 and 3 independent events)
    ♦ S will learn vocabulary (independent events)
    ♦ S will do Getting Started activity sheet
    ♦ T will model theoretical and experimental probability in 2 and 3 independent events using calculators, Venn diagrams, and no calculators
♦ S will do in-class worksheets on theoretical and experimental probability for 2 and 3 independent events using calculators, Venn diagrams, and no calculators
♦ T will go over worksheets and review the process the students used to work the problems and assign homework
	♦ Getting Started problems
	♦ Worksheets on theoretical and experimental probability in compound events (2 and 3 independent events)
	
	♦ Calculators

Theoretical and experimental probability in compound events (2 and 3 dependent events)
    ♦ S will learn vocabulary (dependent events)
    ♦ S will do Getting Started activity sheet
    ♦ T will model theoretical and experimental probability in 2 and 3 dependent events using calculators, Venn diagrams, and no calculators
♦ S will do in-class worksheets on theoretical and experimental probability for 2 and 3 dependent events using calculators, Venn diagrams, and no calculators
♦ T will go over worksheets and review the process the students used to work the problems and assign homework
	♦ Getting Started problems
	♦ Worksheets on theoretical and experimental probability in compound events (2 and 3 dependent events)
	♦ Calculators

Career Connections
Doctors, research companies, casinos, gamblers, and pharmaceutical companies