Geometry

Probability
Geometry Curriculum

Power Objective	**PO 13: Understand and apply experimental and theoretical probability.**(**P.O. #13 Proficiency Rubric**)
Academic Vocabulary	❑ Combination ❑ Independent events ❑ Conditional probability ❑ Mutually exclusive events ❑ Dependent events ❑ Permutation ❑ Experimental probability ❑ Sample Space ❑ Theoretical probability

Enduring Understandings
Students understand that...
	● Probability describes the likelihood that an event will occur. The probability of an event can range from 0 (impossible) to 1 (certain). Experimental probability is based on observation or trials of an experiment, while theoretical probability is based on what should happen mathematically. Combinations and permutations can be used to count the number of possible outcomes.
	    ○ Probability is a measure of the likelihood that an event will occur
	    ○ Counting techniques can be used to find all of the possible ways to complete different tasks or choose items from a list.
	    ○ The probability of compound events can be found by using the probability of each part of the compound event.
	● A frequency table is a data display that shows how often an item appears in a particular category. Frequency tables can be used to calculate the relative frequencies of each item. A two-way frequency table, or contingency table, displays the frequencies of data in two different categories. Contingency tables can be used to find conditional probabilities.
	    ○ Tables can be used to organize data by frequency and find probabilities.
	    ○ Two-way frequency tables can be used to organize data and identify sample spaces

to approximate probabilities.
  o Tables, tree diagrams, and formulas can be used to find conditional probability.
- A random event has no bias or inclination toward any particular outcome. Random number tables and electronic random number generators can be used to model random events. In order to reach a fair decision, each possible choice must have the same probability of being selected. Expected value uses theoretical probability to tell you what you can expect in the long run, which can help you make more informed decisions.
  - Probability can be used to make fair decision based on prior experience.

Essential Questions	- What is the difference between experimental probability and theoretical probability?
	- What is a frequency table?
	- What does it mean for an event to be random?