**Mean**

**Mode**

**Median**

**Variance**

**Standard Deviation**

**Set Theory**

Given set A and set B

Given set S and subset A

**Distributive Laws**

**DeMorgan’s law**

**Simple Event**

**Sample Space**

**Event**

Given sample space S,

Then Event A,

**Probability Axiom 1**

Given sample space S with Event A (subset of S),

**Probability Axiom 2**

Given sample space S with Event A (subset of S),

**Probability Axiom 3**

Given sample space S with Event A (subset of S),

**Collaries of Axioms**

**Probability of Mutually Exclusive Events**

Given event A and event B are mutually exclusive (), then

**MN Rule**

Given m and n with multiple elements,

**Permutation**

**Multinomial Coefficient**

**Combinations**

**Conditional Probability**

**Independent & Dependent**

Dependent if,

Otherwise, dependent

**Multiplicative Law of Probability**

The probability of the intersection of two events A and B is

If A and B are independent,

**General Addition Rule (Additive Law of Probability)**

If A and B are mutually exclusive,

Then,

**Theorem 2.7**

If A is an event, then

**Definition 2.11**

For some positive integer k, let the sets be such that

Then the collection of sets is said to be a partition of S

**The Theorem of Total Probability**

The formula assumes that for most used as….

**Bayes Theorem**

For two events A and B in sample space S, with and ,

If , we can write the theorem of total probability as,

**Probability Mass Function**

**Expectations for Discrete Random Variable**

The expectation (or expected) of a discrete random variable Y, denoted ,

Whenever this sum is finite; it is not finite, we say that the expectation does not exist

**Random Variable Variance**

where

**Random Variable Standard Deviation**

**Binomial Probability Distribution**

**Expectations for Binomial Probability Distribution**

**Binomial Probability Distribution Variance**

**Binomial Probability Distribution Standard Deviation**

**Geometric Probability Distribution**

A random variable is said to have a geometric probability distribution if and

only if

**Geometric Probability Distribution Expected**

**Geometric Probability Distribution Variance**

**Geometric Probability Distribution Standard Deviation**

**Geometric Probability Distribution Success on or before nth trial**

**Geometric Probability Distribution Success before nth trial**

**Geometric Probability Distribution Success on or after nth trial**

**Geometric Probability Distribution Success after nth trial**

**Hyper Geometric Probability Distribution**

**Hyper Geometric Probability Distribution Expected**

**Hyper Geometric Probability Distribution Variance**

**Hyper Geometric Probability Distribution Standard Deviation**

**Negative Binomial Probability Distribution**

**Expectations for Negative Binomial Probability Distribution**

**Negative Binomial Probability Distribution Variance**

**Negative Binomial Probability Distribution Standard Deviation**