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Formula Sheet

**Definition 1.1: Mean**

**Definition 1.2: Variance**

**Definition 1.3: Standard Deviation**

**Definition 2.7 and Theorem 2.2: Permutation**

**Theorem 2.3: Number of Subsets of Various Sizes That Can Be Formed**

**Definition 2.8 and Theorem 2.4: Combination**

**Definition 2.9: Conditional Probability**

**Definition 2.10: Independent Events**

**Theorem 2.5: The Multiplicative Law of Probability**

**Theorem 2.6: The Additive Law of Probability**

**Theorem 2.7: Probability of an Event and its Complement**

**Definition 2.11: Partition**

, for .

**Theorem 2.8: Decomposition**

**Theorem 2.9: Bayes’ Theorem**

**Definition 3.4: Expected Value**

**Theorem 3.2: Expected Value of**

**Definition 3.5: Variance of a Random Variable**

**Theorem 3.4: Mean or Expected Value of the Product of a Constant Times a Function of a Random Variable is Equal to the Constant Times the Expected Value of the Function of the Variable**

**Theorem 3.5: Mean or Expected Value of a Sum of Functions of a Random Variable is Equal to the Sum of Their Respective Expected Values**

**Theorem 3.6: Variance of a Discrete Random Variable**

**Definition 3.7: Binomial Distribution**

, and

**Theorem 3.7: Mean and Variance Associated with a Binomial Random Variable**

and

**Definition 3.8: Geometric Probability Distribution**

,

**Theorem 3.8: The Mean of a Random Variable with a Geometric Distribution is Equal to**

and