**Formula Sheet**

**Chapter 1**

Standard Deviation:

Variance:

**Chapter 2**

Combination:

Permutation:

Conditional Probability:

P(A|B) is read as *Probability of A given B already occurred*

Theorem of Total Probability:

Bayes Theorem:

Note: Bayes’ Theorem is the reverse conditional probability.

Independence Tests:

A variable is said to be **independent** if any holds true, and is **dependent** otherwise.

**Chapter 3**

Probability Mass Function:

Expected Outcome of random variable:

Standard Deviation (with a random variable):

Variance:

Binomial Distribution:

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Geometric Distribution:

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Derived formulas from Geometric Dist:

Hypergeometric Distribution:

Negative Binomial Distribution:

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Poisson Distribution:

Where *k* is the total number of events, and *n* is the number units.

Chebyshev’s Theorem: or

→ Where *k* is the “within” number divided by standard deviation, *k* > 1