**Probability Formula Sheet:**

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|  | **Marginal Probability:** |
|  | **Union Probability:**  **Addition Rule:** |
|  | **Mutually Exclusive Events:** |
|  | **Joint Probability:**  **Multiplication Rule:**  **Note**:  **Independent Events:** |

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|  | **Conditional Probability:** |
|  | **Bayes Theorem:** |
|  | **The Complement / Negation:** |
| **Things to Know:**  **P(AB)** 🡪 1st A, then B  **P(BA)** 🡪 1st B, then A  **P(A and B):**  A and B occur simultaneously. | **Compound Probability:**  “**Independent Events** – With Replacement”  **Dependent Events:** “Without Replacement” |
|  | **Expected Value:**  X1 🡪 Positive Value of Winning  X2 🡪 Negative Value of Losing  P1 🡪 Probability of Winning (decimal)  P2 🡪 Probability of Losing (decimal) |

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| **Binomial Distribution:**  P(x) 🡪 Probability of ‘x’ successes in ‘n’ trials.  p 🡪 Probability of a successful event.  q 🡪 Probability that the event will fail. | **Probability:** |
| **Geometric Distribution:**  P(x) 🡪 Probability that the nth event will succeed.  n 🡪 number of 1st successful trial.  P(4) 🡪 Probability that the 4th event will be successful. | **Probability:** |
| **Geometric Probability:** |  |
| **Poisson Distribution:**  Mean:  Variance:  Standard Deviation: | **Probability:** |

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| **Uniform Distribution:** **(Area = 1)** | **Probability:** |
| **Exponential Distribution:** **(Area = 1)** | **Probability:** |
| **Standard Normal Distribution:** | **Probability:** |