Math 102
Exam 3 Review Sheet

Section 1.5 and 1.6 Set Operations and Survey Problems

Key Topics:
• Understand the be able to apply the set operations: union, intersection, difference, and compliment.
• Know the definition of disjoint sets and memorize De Morgan's Laws.
• Be able to draw and use Venn diagrams
• Be able to count the number of elements in the union of two sets.
• Be able to understand descriptions of sets using multiple set operations;
• Be able illustrate sets using multiple set operations by shading regions of a Venn diagram.
• Given a Venn diagram, be able to give a description of a set that has that diagram using set one or more operations.
• Be able to organize and interpret survey information using sets and Venn diagrams.
• Be able to answer questions about a real life situation based on information from a related survey.

Section 13.1: The Basics of Probability Theory

Key Topics:
• Know the definitions of: experiment, outcomes, sample space, and event
• Know how to describe an event as a subset of the sample space
• Know the definition of the probability of an outcome and the probability of an event.
• Memorize the three basic properties of probability
• Know how to use counting to calculate both the probability of an event and the "odds" of an event in the case where all outcomes are equally likely.

Section 13.2: Complements and Unions of Events

Key Topics:
• Know how to write a given event as either the complement of an event or as the union of two other events.
• Memorize the basic formulas for computing the probability of the complement of an event and the union of two events.
• Be able to apply Venn diagrams for probability and basic probability formulas to find the probability of events in a given situation.

Section 13.3: Conditional Probability and Intersections of Events

Key Topics:
• Know the definition of conditional probability and be comfortable with the idea that knowing that one event has occurred can impact the probability that other events occur.
• Know how to compute conditional probabilities both in the case that all outcomes and equally likely, and when outcomes are not all equally likely.
• Know the definition of independent and dependent events, and be able to apply it to a given pair of events.
• Memorize and be able to apply the rule for computing the probability of the intersection of two events.
• Know how to use a tree diagram to help compute conditional probabilities and the probability of the intersection of multiple events.

Section 13.4: Expected Value

Key Topics:
• Know the definition of expected value, and memorize the method for computing it in a specific situation.
• Be able to use expected value to predict the "average" outcome of an experiment or game.
• Memorize the definition of a fair game, and know how to use expected value to determine whether or not a given game is fair.

Practice Problems: Chapter Test page 68 # 20, 21, 22, 23, 25, 26
Chapter 13 Test page 772 # 1, 2, 3, 6, 7, 8, 9, 10, 11, 12, 14