Unit 1 Objectives: (Sections 6.1-6.6)

Upon completion of this unit, you will be able to:

6.1.1 Accurately use the vocabulary and symbols associated with sets.
6.1.2 Use set-builder notation to describe sets.
6.1.3 Determine whether two sets are equal.
6.1.4 Determine whether a given set is empty.
6.1.5 Construct a Venn diagram to represent relations among sets.
6.1.6 Determine whether one set is a subset of another.
6.1.7 Determine the union, $A \cup B$, of two sets $A$ and $B$.
6.1.8 Determine the intersection, $A \cap B$, of two sets $A$ and $B$.
6.1.9 Find the complements, $A'$, of a set $A$.
6.1.10 Determine whether two sets are disjoint.

6.2.1 Describe in words regions which represent union, intersections and/or complements of sets.
6.2.2 Use the Inclusion-Exclusion Principle to determine $n(A \cup B)$, the number of elements in the union of two sets $A$ and $B$.
6.2.3 Use a Venn Diagram and the Inclusion-Exclusion Principle to determine the number of elements in each subset in a 2 or 3 set Venn Diagram.
6.2.4 Determine $n(A')$, the number of elements in the complement of a set $A$.

6.3.1 Use a tree diagram to represent all possible outcomes when a series of 2 or more activities is performed.
6.3.2 Use the Multiplication Rule to determine the number of ways in which a series of 2 or more activities can be performed one after another.
6.3.3 Use the Addition Rule to determine the number of ways in which to perform one activity or another but not both.

6.4.1 Perform computations involving factorial notation.
6.4.2 State the three characteristics that determine a permutation.
6.4.3 Use a permutation to determine the number of arrangements possible when a subset or subgroup of a particular size is selected from a given set of elements.
6.4.4 Determine the number of arrangements possible in a set containing two or more subsets of identical objects.
6.4.5 Solve applied problems involving permutations.

6.5.1 State the three characteristics that determine a combination.
6.5.2 Use a combination to determine the number of ways to select a subset or subgroup of a particular size from a given set of elements.
6.5.3 Solve applied problems involving combinations.

6.6.1 Use appropriate counting principles to solve multi-step counting problems.