Experiments and Events:

Def: An experiment is a process whose outcome is not known in advance with certainy.

Sample Space: Collection of *all* possible outcomes of an experiment. S or Ω. Each outcome is an element of the sample space $s \in S$.

Operations:

Union: $x \in S : A \cup B = \{x \in A \text{ or } x \in B\}$

$A \cup B = B \cup A$

$A \cup A = A$

$A \cup \emptyset = A$

$A \cup S = S$

$A \subset B \Rightarrow A \cup B = B$

$A_1, A_2, \ldots, A_n \Rightarrow A_1 \cup A_2 \cup \cdots \cup A_n = \bigcup\limits_{i=1}^{i=n} A_i$

$\bigcup\limits_{i=1}^{\infty} A_i \to \bigcup\limits_{i \in I} A_i$

$(A \cup B) \cup C = A \cup (B \cup C) = A \cup B \cup C$

Intersections: $A \cap B = \{x \in A \text{ and } x \in B\} = AB$