Commutative	$A \cup B = B \cup A$	$A \cap B = B \cap A$
Associative	$A \cup (B \cup C) = A \cup (B \cup C)$	$A \cap (B \cap C) = A \cap (B \cap C)$
Neutral element	$A \cup \emptyset = A$	$A \cap E = A$
Absorbing element	$A \cup E = E$	$A \cap \emptyset = \emptyset$
Distributive	$A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$	$A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$
De Morgan's laws	$\overline{A \cap B} = \overline{A} \cup \overline{B}$	$\overline{A \cup B} = \overline{A} \cap \overline{B}$
Laplace laws	$P(A) = \frac{\text{Number of ways it can happen}}{\text{Total number of outcomes}}$	
Complement of an Event	$P(\overline{A}) = 1 - P(A)$	
Union of Events	$P(A \cup B) = P(A) + P(B) - P(A \cap B)$	
Conditional Probability	$P(A \mid B) = \frac{P(A \cap B)}{P(B)}$	
Independent Events	$P(A \mid B) = P(A)$	$P(A \cap B) = P(A) \times P(B)$
Permutation	$P_n = n! = n \times (n-1) \times ... \times 2 \times 1$	ex : $P_4 = 4! = 4 \times 3 \times 2 \times 1 = 24$
Permutations without repetition	${}^nA_p = \frac{n!}{(n-p)!}$	ex : ${}^6A_2 = \frac{6!}{(6-2)!} = 30$
Permutations with repetition	${}^nA'_p = n^p$	ex : ${}^5A'_3 = 5^3 = 125$
Combination	${}^nC_p = \frac{{}^nA_p}{p!} = \frac{n!}{(n-p)! \times p!}$	ex : ${}^5C_4 = \frac{{}^5A_4}{4!} = 5$