

Table 4-5

Probabilities
under Statistical
Independence
and Dependence

Type of Probability	Symbol	Formula under Statistical Independence	Formula under Statistical Dependence
Marginal	$P(A)$	$P(A)$	Sum of the probabilities of the joint events in which A occurs
Joint	$P(AB)$	$P(A) \times P(B)$	$P(A B) \times P(B)$
	or $P(BA)$	$P(B) \times P(A)$	$P(B A) \times P(A)$
Conditional	$P(B A)$	$P(B)$	$\frac{P(BA)}{P(A)}$
	or $P(A B)$	$P(A)$	$\frac{P(AB)}{P(B)}$

Table 4-6 Finding the Marginal Probability of Getting an Ace		Elementary Event	Probability of Elementary Event	$P(\text{Ace} \text{Elementary Event})$	$P(\text{Ace, Elementary Event})^*$
		Type 1	0.5	0.4	$0.4 \times 0.5 = 0.20$
		Type 2	0.5	0.7	$0.7 \times 0.5 = 0.35$
			1.0		$P(\text{ace}) = 0.55$

*A comma is used to separate joint events. We can join individual letters to indicate joint events without confusion (AB, for example, is not the same as A|B). We can join individual letters to indicate joint events without confusion (AB, for example, is not the same as A|B). We can join individual letters to indicate joint events without confusion (AB, for example, is not the same as A|B).