Let $A_{1}, \ldots, A_{n}$ be a partition of a sample space $S$ with $P\left(A_{i}\right)>0$ for all $i$, and let $B$ be an event in $S$. Then

$$
P(B)=P\left(B \mid A_{1}\right) P\left(A_{1}\right)+\ldots+P\left(B \mid A_{n}\right) P\left(A_{n}\right) .
$$

