1. $P(E|F) * P(F) = P(E \cap F)$
2. If E and F are independent events, $P(E) * P(F) = P(E \cap F)$

In other words, when E and F are independent events, $P(E|F) = P(E)$.

3. Three events E, F and G are said to be independent if
   - $P(E \cap F \cap G) = P(E) * P(F) * P(G)$
   - $P(E \cap F) = P(E) * P(F)$
   - $P(E \cap G) = P(E) * P(G)$
   - $P(F \cap G) = P(F) * P(G)$
4. $P(E) = P(E \cap F) \cup P(E \cap F_c)$

In the above formula, each conditional probability is weighted by the probability of the event on which it is conditioned.

5. $P(E) = P(E|F_1)*P(F_1) + P(E|F_2)*P(F_2) + \ldots + P(E|F_k)*P(F_k)$
6. For mutually exclusive and exhaustive events, $F_1, F_2 \ldots F_k$

$$P(F_1|E) = \frac{P(E|F_1) * P(F_1)}{P(E|F_1) * P(F_1) + P(E|F_2) * P(F_2) + \ldots + P(E|F_k) * P(F_k)}$$

   This is known as Baye's rule/theorem.

7. If $P(A|B) > P(A)$ then $P(B|A) > P(B)$
8. If $A \subset B$ then $P(B|A) = 1$
9. If two events A and B are independent events of a random experiment, then A and B cannot be disjoint, unless $P(A)=0$ and $P(B)=0$