1y $P(A \cup B) = P(A) + P(B) - P(A \cap B)$

2y $P(A \cup B \cup C)$
$= P(A) + P(B) + P(C) - P(A \cap B) - P(B \cap C)$
$- P(A \cap C) + P(A \cap B \cap C)$

3y $P\left(\bigcup_{i=1}^{n} A_i\right) = \sum_{i=1}^{n} P(A_i) - \sum\sum_{i<j} P(A_i \cap A_j)$
$+ \sum\sum\sum_{i j k} \{P(A_i \cap A_j \cap A_k) - \ldots + (-1)^{n+1} P\left(\bigcap_{i=1}^{n} A_i\right)$