$P(A|B) = \frac{P(AB)}{P(B)}$, $P(A) = \sum\limits_{k=1}^{n} P(A|B_k)P(B_k)$, $P(B_i|A) = \frac{P(A|B_i)P(B_i)}{\sum\limits_{k=1}^{n} P(A|B_k)P(B_k)}$

$f_X(x) = P(X = x)$, $E(H(X)) = \sum_x H(x)f_X(x)$,
$Var(X) = E((X - E(X))^2) = EX^2 - (EX)^2$

$P(|X - \mu| \geq c\sigma) \leq 1/c^2$
$\hat{E}X = \frac{X_1+X_2+...+X_n}{n}$, $\hat{V}X = \frac{X_1^2+X_2^2+...+X_n^2}{n-1} - \frac{(X_1+X_2+...+X_n)^2}{n(n-1)}$

$G_X(z) = E(z^X),\ G'_X(1) = EX,\ G''_X(1) + G'_X(1) - (G'_X(1))^2 = VX$

$f_{XY}(x,y) = P(X = x, Y = y),\ f_X(x) = \sum\limits_y f_{XY}(x,y),\ f_Y(y) = \sum\limits_x f_{XY}(x,y)$
$E(H(X,Y)) = \sum_x \sum_y H(x,y)f_{XY}(x,y)$

$Cov(X,Y) = E((X-\mu_x)(Y-\mu_y)) = E(XY)-E(X)E(Y)$, $\rho_{XY} = \frac{Cov(X,Y)}{\sqrt{VarX}\sqrt{VarY}}$
$f_{X|y}(x) = f_{X|Y=y}(x) = \frac{f_{XY}(x,y)}{f_Y(y)}$

U_n: $f_X(x) = \frac{1}{n},\ G_X(e^t) = \frac{\sum\limits_{k=1}^{n} e^{tx_k}}{n},\ EX = \frac{\sum\limits_{k=1}^{n} x_k}{n},\ VX = \frac{\sum\limits_{k=1}^{n} x_k^2}{n} - \left(\frac{\sum\limits_{k=1}^{n} x_k}{n}\right)^2$

Be: $f_X(x) = p^x(1-p)^{1-x},\ G_X(e^t) = q + pe^t,\ EX = p,\ VX = p(1-p)$

Ge: $f_X(x) = (1-p)^{x-1}p,\ G_X(e^t) = \frac{pe^t}{1-qe^t},\ EX = \frac{1}{p},\ VX = \frac{q}{p^2}$

Bi: $f_X(x) = \binom{n}{x}p^x(1-p)^{n-x},\ G_X(e^t) = (q+pe^t)^n,\ EX = np,\ VX = npq$

$NegBi$: $f_X(x) = \binom{x-1}{r-1}p^r(1-p)^{x-r},\ G_X(e^t) = \frac{(pe^t)^r}{(1-qe^t)^r},\ EX = \frac{r}{p},\ VX = \frac{rq}{p^2}$

HG: $f_X(x) = \frac{\binom{r}{x}\binom{N-r}{n-x}}{\binom{N}{n}},\ G_X(e^t) = ,\ EX = n\frac{r}{N},\ VX = n\frac{r}{N}\frac{N-r}{N}\frac{N-n}{N-1}$

Po: $f_X(x) = \frac{e^{-k}k^x}{x!},\ G_X(e^t) = e^{k(e^t-1)},\ EX = k,\ VX = k$