FORMULA PAGE

X follows a Binomial distribution:
its pmf is
\[
p(x; n, p) = \binom{n}{x} p^x (1 - p)^{n-x}, \quad x = 0, \ldots, n
\]
\[
e(x) = 0 \text{ otherwise}
\]
\[
E(X) = np, \quad V(X) = np(1 - p)
\]

X follows a Uniform distribution over the interval [0, 1]:
its pmf is
\[
f(x) = \begin{cases} 1 & \text{if } 0 \leq x \leq 1 \\ 0 & \text{otherwise} \end{cases}
\]
\[
E(X) = \frac{1}{2}, \quad V(X) = \frac{1}{12}
\]

X follows a Poisson distribution:
its pmf is
\[
p(x; \lambda) = \frac{e^{-\lambda} \lambda^x}{x!}, \quad x = 0, 1, 2, \ldots
\]
\[
e(x) = 0 \text{ otherwise}
\]
\[
E(X) = V(X) = \lambda
\]

X follows a Normal distribution:
its pdf is
\[
f(x; \mu, \sigma) = \frac{1}{\sqrt{2\pi}\sigma} e^{-\frac{(x-\mu)^2}{2\sigma^2}}
\]
\[
E(X) = \mu, \quad V(X) = \sigma^2
\]

X follows an Exponential distribution:
its pdf is
\[
f(x; \lambda) = \lambda e^{-\lambda x}, \quad x \geq 0
\]
\[
= 0 \quad x < 0
\]
\[
E(X) = \frac{1}{\lambda}, \quad V(X) = \frac{1}{\lambda^2}
\]