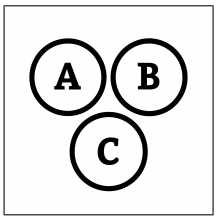
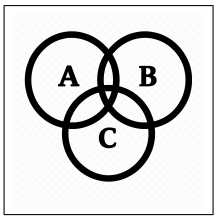
G Bernoulli Trials G



$n = 2$

$p = 0.50$

$k = 1$

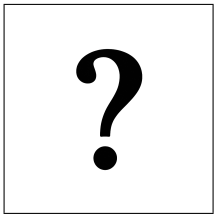


$P(X = k) = \binom{n}{k}(p)^k(1-p)^{n-k}$

$P(X = 1) = \binom{2}{1}(0.50)^1(0.50)^1$

$P(X = 1) = 2 \times 0.50 \times 0.50$

$P(X = 1) = \boxed{0.50}$

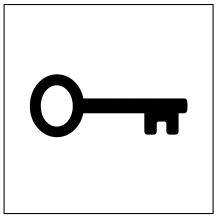


$n = 20$

$p = 0.03$

$P(X \geq 2) = ?$

G Bernoulli Trials G



$n = 20$
$p = 0.03$
$P(X \geq 2) = ?$

$P(X \geq 2) \;=\; 1 - P(X < 2) \;=\; 1 - [P(X = 0) + P(X = 1)]$
$P(X = 0) = \binom{20}{0}(0.03)^0(0.97)^{20} = 0.97^{20}$
$P(X = 1) = \binom{20}{1}(0.03)^1(0.97)^{19} = 20 \cdot 0.03 \cdot 0.97^{19}$
$P(X \geq 2) = 1 - \left[0.97^{20} + 20 \cdot 0.03 \cdot 0.97^{19}\right]$

$0.97^{20} \approx 0.5437$
$20 \cdot 0.03 \cdot 0.97^{19} \approx 0.3364$

$P(X \geq 2) \approx 1 - (0.5437 + 0.3364) \approx 1 - 0.8801 \approx 0.1199$