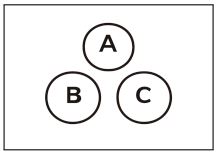
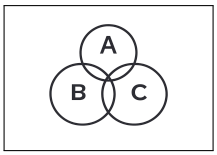
10 Discrete Distribution Posterior Probablities G



$P(H) = 0.30$
$P(L) = 0.70$
$P(A|H) = 0.40$
$P(A|L) = 0.20$

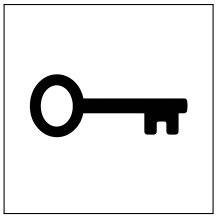


$P(A) = P(A|H)P(H) + P(A|L)P(L)$
$P(A) = (0.4)(0.3) + (0.2)(0.7) = 0.12 + 0.14 = 0.26$

$$P(H|A) = \frac{P(A|H)P(H)}{P(A)} = \frac{(0.4)(0.3)}{0.26} = \frac{0.12}{0.26} = \frac{6}{13} \approx 0.4615$$

$P(E) = 0.25$
$P(E^C) = 0.75$
$P(F|E) = 0.99$
$P(F|E^C) = 0.17$
$P(E|F) = ?$

10 Discrete Distribution Posterior Probablities G



$P(E) = 0.25$
$P(E^C) = 0.75$
$P(F|E) = 0.99$
$P(F|E^C) = 0.17$
$P(E|F) = ?$

$P(F) = P(F|E)P(E) + P(F|E^C)P(E^C)$
$= (0.99)(0.25) + (0.17)(0.75)$
$= 0.38$

$$P(E|F) = \frac{P(F|E)P(E)}{P(F)} = \frac{(0.38)(0.25)}{0.38} = 0.66$$