

$$P(B_j) = \sum_{i=1}^2 P(B_j, A_i) = \sum_{i=1}^2 P(B_j | A_i) P(A_i)$$

$$P(A_i | B_j) = \frac{P(B_j | A_i) P(A_i)}{\sum_{i=1}^2 P(B_j | A_i) P(A_i)}$$

Ejercicio

Para $P(B=r)=0.4$ y $P(B=b)=0.6$, $P(B=r) + P(B=b)=1$
según la figura encontrar

f: fruit, B: box, a: apple, o: orange

$$- P(F=a) = ?$$

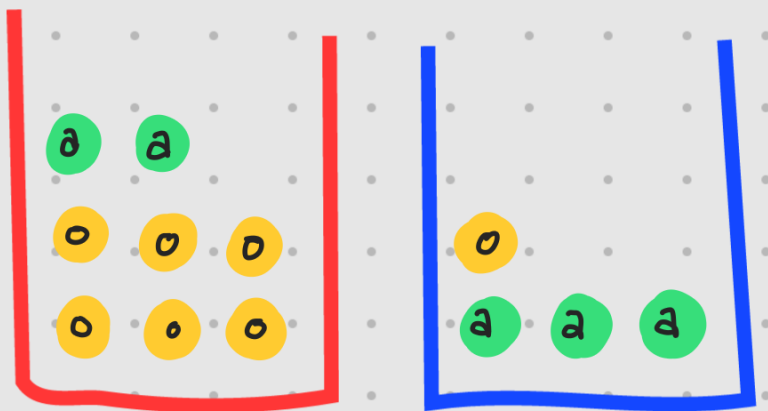
$$- P(F=o) = ?$$

$$- P(B=r | F=o) = ?$$

$$- P(B=b | F=o) = ?$$

$$- P(B=r | F=a) = ?$$

$$- P(B=b | F=a) = ?$$



$$P(A_i | B_j) = \frac{P(B_j | A_i) P(A_i)}{P(B_j)}$$

	Red	Blue
apple	2	3
orange	6	1

$$P(F=2)$$

$$P(F=2) = P(F=2 | B=r) \cdot P(B=r) + P(F=2 | B=b) \cdot P(B=b)$$

$$= \left(\frac{2}{8}\right)(0.4) + \left(\frac{3}{4}\right)(0.6)$$

$$= 0.55$$

$$P(F=0)$$

$$P(F=0) = P(F=0 | B=r) P(B=r) + P(F=0 | B=b) P(B=b)$$

$$= \left(\frac{6}{8}\right)(0.4) + \left(\frac{1}{4}\right)(0.6)$$

$$= 0.45$$

$$P(B=r | F=0)$$

$$P(B=r | F=0) = \frac{P(F=0 | B=r) P(B=r)}{P(F=0)} =$$

$$= \frac{P(F=0 | B=r) P(B=r)}{P(F=0 | B=r) P(B=r) + P(F=0 | B=b) P(B=b)}$$

$$= \frac{\left(\frac{6}{8}\right)(0.4)}{0.45}$$

$$0.45$$

$$= 0.66$$

$$P(B=b | F=0)$$

$$P(B=b | F=0) = \frac{P(F=0 | B=b) P(B=b)}{P(F=0)}$$

$$= \frac{\left(\frac{1}{4}\right) (0.6)}{0.45}$$

$$= 0.33$$

$$P(B=r | F=2)$$

$$P(B=r | F=2) = \frac{P(F=2 | B=r) P(B=r)}{P(F=2)}$$

$$= \frac{\left(\frac{2}{8}\right) (0.4)}{0.55}$$

$$= 0.18$$

$$P(B=b | F=2)$$

$$P(B=b | F=2) = \frac{P(F=2 | B=b) P(B=b)}{P(F=2)}$$

$$\frac{= \left(\frac{3}{4} \right) (0.6)}{0.55}$$

$$= 0.81$$