

$$8. P(A) = 0.5$$

$$P(B) = 0.45$$

$$P(A \cup B) = 0.9$$

a) ¿A y B compatibles?

A y B son compatibles si $A \cap B \neq \emptyset$, es decir, si $P(A \cap B) \neq 0$

$$P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

$$0.9 = 0.5 + 0.45 - P(A \cap B)$$

$$P(A \cap B) = 0.5 + 0.45 - 0.9$$

$$P(A \cap B) = 0.05$$

$P(A \cap B) \neq 0 \Rightarrow A$ y B son compatibles

b) ¿A y B independientes?

A y B son independientes si $P(A \cap B) = P(A) \cdot P(B)$

$$P(A \cap B) = 0.05$$

$$P(A) \cdot P(B) = 0.5 \cdot 0.45 = 0.225$$

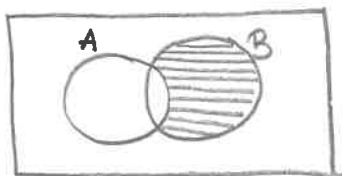
$\Rightarrow P(A \cap B) \neq P(A) \cdot P(B) \Rightarrow$ NO son independientes

$$c) P(A \cap B) \Rightarrow P(A \cap B) = 0.05$$

$$P(A/B) \Rightarrow P(A/B) = \frac{P(A \cap B)}{P(B)} \Rightarrow P(A/B) = \frac{0.05}{0.45} = 0.1111$$

$$P(B/A) \Rightarrow P(B/A) = \frac{P(B \cap A)}{P(A)} = \frac{P(A \cap B)}{P(A)} = \frac{0.05}{0.5} = 0.1$$

$$P(\bar{A} \cap B) \Rightarrow P(\bar{A} \cap B) = P(B - A) = P(B) - P(A \cap B) \Rightarrow$$



teoría

$$\Rightarrow P(\bar{A} \cap B) = 0.45 - 0.05$$

$$P(\bar{A} \cap B) = 0.4$$

9. A y B son independientes

$$P(A) = 0.6$$

$$P(B) = 0.2$$

a) $P(A \cap B)$

$$P(A \cap B) = P(A) \cdot P(B) \Rightarrow P(A \cap B) = 0.6 \cdot 0.2 = 0.12$$

↓
porque A y B son indep.

b) $P(A \cup B)$

$$P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

$$P(A \cup B) = 0.6 + 0.2 - 0.12$$

$$P(A \cup B) = 0.68$$

c) $P(A/B)$

$$P(A/B) = \frac{P(A \cap B)}{P(B)} \Rightarrow P(A/B) = \frac{0.12}{0.2} = 0.6$$

NOTA: lógicamente, como A y B son independientes debe cumplirse que $P(A/B) = P(A)$ y así fue.

10. 3 amarillos, 5 rojos y 6 verdes.

a) $E = \{ \text{amarillo, rojo, verde} \}$

b) No son equiprobables

$$A: "sale bola amarilla" \quad P(A) = \frac{3}{14}$$

$$R: "sale bola roja" \quad P(R) = \frac{5}{14}$$

$$V: "sale bola verde" \quad P(V) = \frac{6}{14} = \frac{3}{7}$$

d) $P(\bar{A})$

$$P(\bar{A}) = 1 - P(A) = 1 - \frac{3}{14} \Rightarrow P(\bar{A}) = \frac{11}{14}$$

11. a) los Oros:

$$O: "la carta es 1 oro" \Rightarrow P(O) = \frac{10}{40} = 0.25 = 25\%$$

b) 3 de bastos

$$3B: "la carta es el 3 de bastos" \Rightarrow P(3B) = \frac{1}{40} = 0.025 = 2.5\%$$

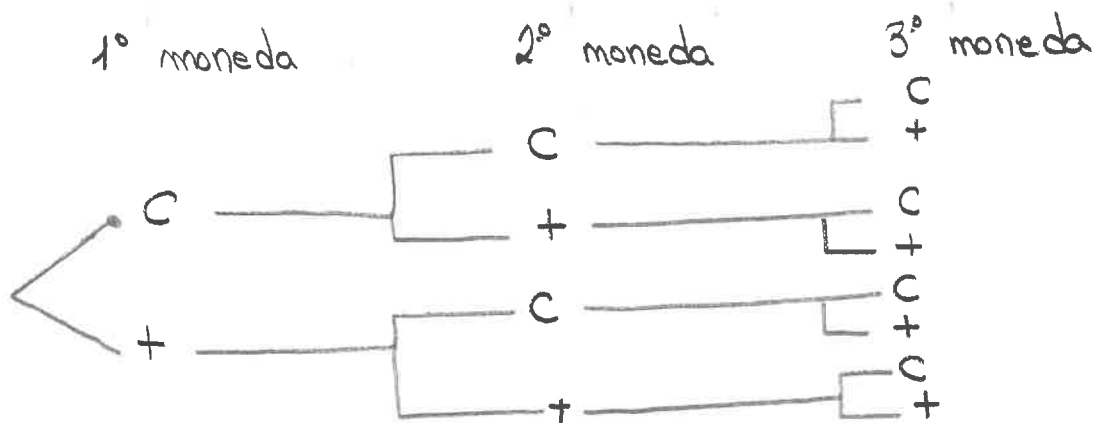
c) Una figura

$$F: "la carta es 1 figura" \Rightarrow P(F) = \frac{12}{40} = 0.3 = 30\%$$

d) Un cuatro

$$4: "la carta es un 4" \Rightarrow P(4) = \frac{4}{40} = 0.1 = 10\%$$

12.



$$E = \{(C,C,C), (C,C,+), (C,+,C), (C,+,+), (+,C,C), (+,C,+), (+,+,C), (+,+,+)\}$$

a) Sacar 3 caras

$$3C: "salen 3 caras" \Rightarrow P(3C) = \frac{1}{8} = 0.125 = 12.5\%$$

b) Sacar 3 cruces

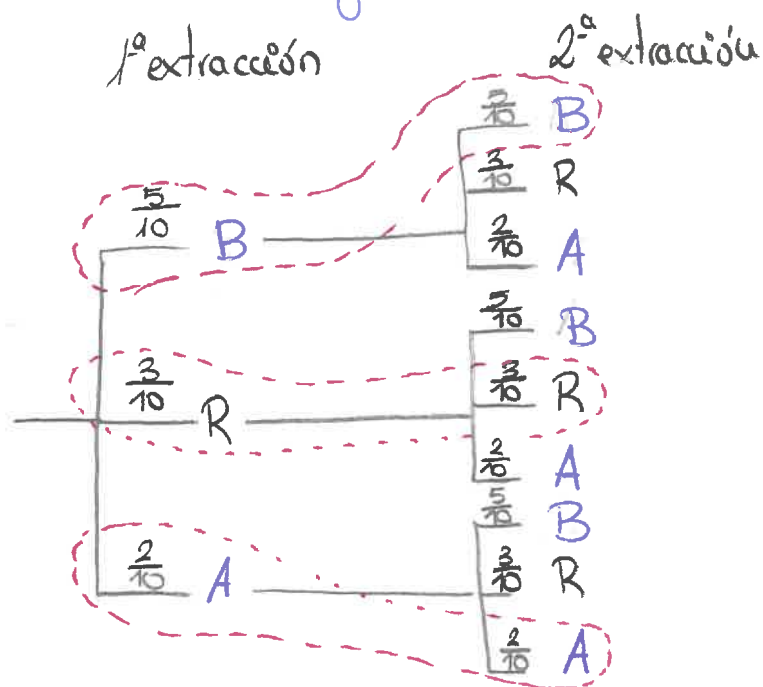
$$3+: "salen 3 cruces" \Rightarrow P(3+) = \frac{1}{8} = 0.125 = 12.5\%$$

c) Sacar 2 caras y 1 cruz

$$A: "salen 2 caras y 1 cruz" \Rightarrow P(A) = \frac{3}{8} = 0.375 = 37.5\%$$

13. 5 bolas blancas, 3 rojas, 2 azules.

• Devolvemos:

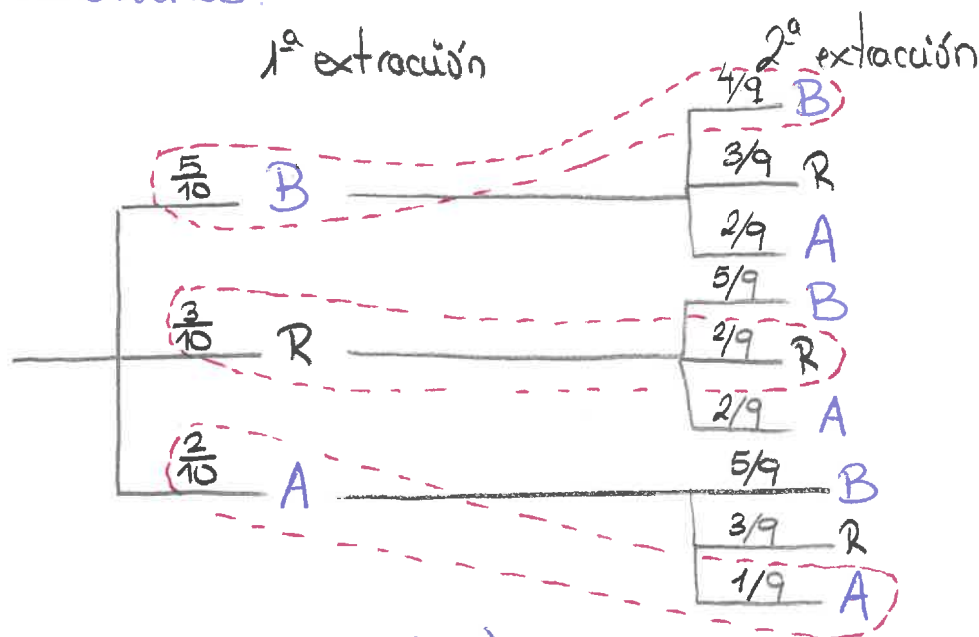


Z: "las 2 bolas son del mismo color"

$$P(Z) = P(B, B) + P(R, R) + P(A, A)$$

$$P(Z) = \frac{5}{10} \cdot \frac{5}{10} + \frac{3}{10} \cdot \frac{3}{10} + \frac{2}{10} \cdot \frac{2}{10} = \frac{38}{100} = 0.38$$

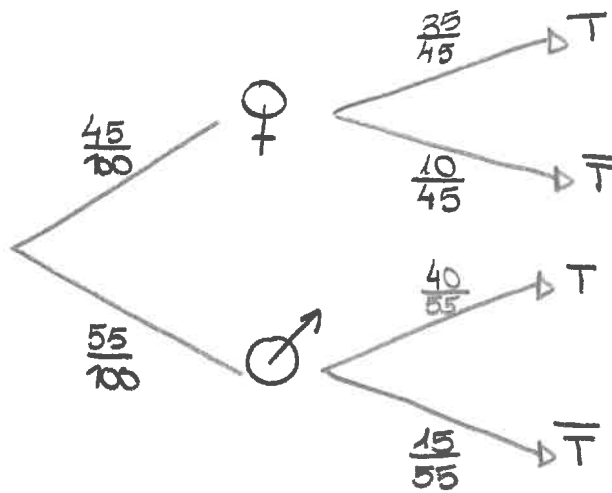
• No devolvemos:



$$P(Z) = P(B, B) + P(R, R) + P(A, A)$$

$$P(Z) = \frac{5}{10} \cdot \frac{4}{9} + \frac{3}{10} \cdot \frac{2}{9} + \frac{2}{10} \cdot \frac{1}{9} = \frac{20}{90} + \frac{6}{90} + \frac{2}{90} = \frac{28}{90} = 0.3111$$

14.



a) Sea chico:

$$P(\text{♂}) = \frac{55}{100} = 0.55 = 55\%$$

b) Si sabemos que juega al tenis, que sea chica.

$$P(\text{♀}/T) = \frac{P(\text{♀} \cap T)}{P(T)}$$

$$P(\text{♀} \cap T) = \frac{45}{100} \cdot \frac{35}{45} = 0.35$$

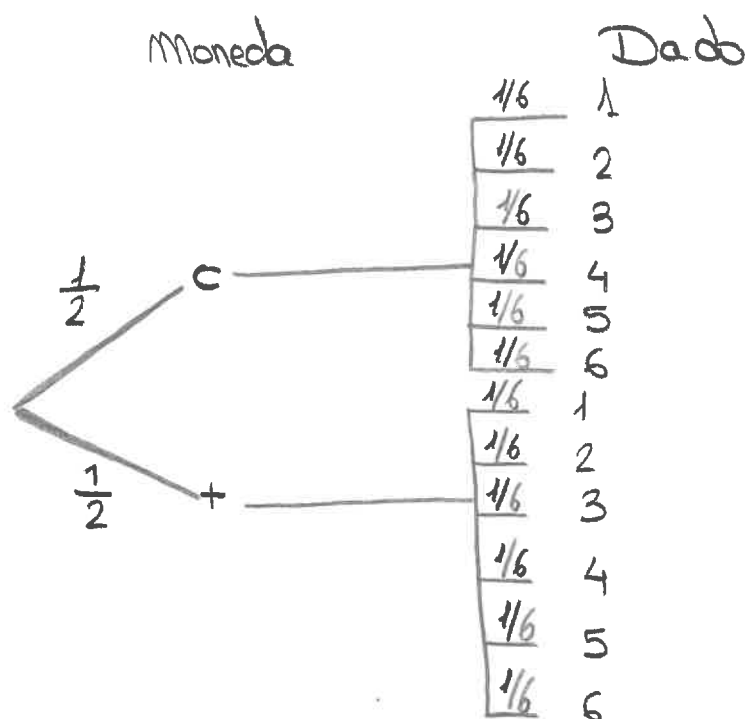
$$P(T) = P(\text{♀} \cap T) + P(\text{♂} \cap T) = \frac{45}{100} \cdot \frac{35}{45} + \frac{55}{100} \cdot \frac{40}{55} = 0.75$$

$$\Rightarrow P(\text{♀}/T) = \frac{0.35}{0.75} \Rightarrow P(\text{♀}/T) = 0.4667 = 46.67\%$$

c) Chico que no juegue al tenis

$$P(\text{♂} \cap \bar{T}) = \frac{55}{100} \cdot \frac{15}{55} = 0.15 = 15\%$$

15.



a) Salga cara

$$C: \text{"sale cara"} \Rightarrow P(C) = \frac{1}{2}$$

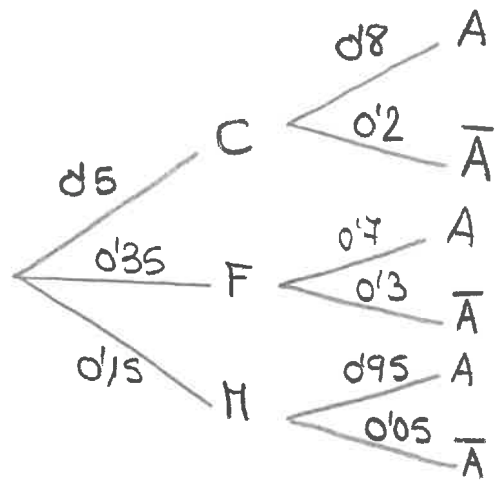
b) Salga cara y 4

$$P(C \cap 4) = \frac{1}{2} \cdot \frac{1}{6} = \frac{1}{12} = 0.0833 = 8.33\%$$

c) Salga un 4

$$4: \text{"sale un 4"} \Rightarrow P(4) = P(C \cap 4) + P(+ \cap 4) = \frac{1}{2} \cdot \frac{1}{6} + \frac{1}{2} \cdot \frac{1}{6} = 0.1667$$

16.



a) El alumno aprueba

A. "el alumno aprueba"

$$P(A) = P(C \cap A) + P(F \cap A) + P(H \cap A) = 0.5 \cdot 0.8 + 0.35 \cdot 0.7 + 0.15 \cdot 0.95$$

$$P(A) = 0.4 + 0.245 + 0.1425$$

$$P(A) = 0.7875 = 78.75\%$$

b) Si se sabe que aprobó, que curse francés

$$P(F/A) = \frac{P(F \cap A)}{P(A)} = \frac{0.35 \cdot 0.7}{0.7875} = \frac{0.245}{0.7875} = 0.3111 = 31.11\%$$

