

10 TVC - SOLUÇÃO

A

$$\begin{aligned} \textcircled{1} \quad \frac{P(H|E)}{P(G|E)} &= \frac{P(H)}{P(G)} \frac{P(E|H)}{P(E|G)} \\ &= \frac{P(H)}{P(G)} \frac{\frac{P(E \cap H)}{P(H)}}{\frac{P(E \cap G)}{P(G)}} = \frac{P(H|E) P(E)}{P(G|E) P(E)} \end{aligned}$$

$$\textcircled{2} \quad \frac{P(H|E)}{P(G|E)} = \frac{\frac{P(H)}{P(G)}}{\frac{1}{2}} = \frac{3}{2}$$

$$P(H|E) = 1,5 P(G|E)$$

hipótese H é 1,5 mais provável

$$\textcircled{B} \quad P(T+|D_1) = 0,8; \quad P(T+|D_2) = 0,6; \quad P(T+|D_3) = 0,4$$

$$P(D_1) = P(D_2) = P(D_3) = 1/3$$

$$\textcircled{3} \quad P(T+) = P(T+|D_1)P(D_1) + P(T+|D_2)P(D_2) + P(T+|D_3)P(D_3)$$

$$= 0,8 \times \frac{1}{3} + 0,6 \times \frac{1}{3} + 0,4 \times \frac{1}{3} = \frac{1,8}{3} = \underline{0,6}$$

$$\textcircled{4} \quad P(D_1|T+) = \frac{0,8 \times \frac{1}{3}}{0,6} = \frac{4}{9} = \underline{0,44}$$

$$P(D_2|T+) = \frac{0,6 \times \frac{1}{3}}{0,6} = \frac{3}{9} = \underline{0,33}$$

$$P(D_3|T+) = \frac{0,4 \times \frac{1}{3}}{0,6} = \frac{2}{9} = \underline{0,22}$$

1

1

C-

$$5 - \frac{1}{36^7}$$

$$6 - \frac{1}{5(36^5)5}$$

$$7 - \frac{1}{5(36^6)}$$

D- $P(A) = 1/4$; $P(B) = 1/3$; $P(C) = 1/2$
A, B & C independent

8. $P\{\text{nenhum evento ocorrer}\} = P(A^c \cap B^c \cap C^c)$
 $= \left[1 - \frac{1}{4}\right] \left[1 - \frac{1}{3}\right] \left[1 - \frac{1}{2}\right] = \boxed{0,125}$

9. $P\{\text{exatamente um ocorrer}\} =$
 $P(A \cap B^c \cap C^c) + P(B \cap A^c \cap C^c) + P(A^c \cap B^c \cap C)$
 $= \frac{1}{4} \cdot \frac{2}{3} \cdot \frac{1}{2} + \frac{3}{4} \cdot \frac{1}{3} \cdot \frac{1}{2} + \frac{3}{4} \cdot \frac{2}{3} \cdot \frac{1}{2} = \frac{1}{24} + \frac{1}{4} + \frac{1}{2} = \frac{13}{24} = \boxed{0,4583}$

10. $P(A \cup B^c | B) = \frac{P[(A \cup B^c) \cap B]}{P(B)}$
 $= \frac{P[(A \cap B) \cup (B^c \cap B)]}{P(B)} = \frac{P(A \cap B)}{P(B)} = P(A|B) =$
 $\stackrel{\text{ind.}}{=} P(A) = \boxed{\frac{1}{4}}$

E-

11. $\boxed{1/2}$