

Probability: Univariate Models

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 - a.

$$P(H, e_1, e_2) = P(e_1, e_2|H)P(H) \quad (1)$$

$$\begin{aligned} P(H|e_1, e_2) &= \frac{P(H, e_1, e_2)}{P(e_1, e_2)} \\ &= \frac{P(e_1, e_2|H)P(H)}{P(e_1, e_2)} \end{aligned} \quad (2)$$

Therefore, the second sets of numbers are sufficient for the calculation.

- b.

from $E_1 \perp E_2|H$, we know that:

$$P(e_1, e_2|H) = P(e_1|H)P(e_2|H) \quad (3)$$

Therefore, from equations 3 and 2, there are:

$$\begin{aligned} P(H|e_1, e_2) &= \frac{P(e_1, e_2|H)P(H)}{P(e_1, e_2)} \\ &= \frac{P(e_1|H)P(e_2|H)P(H)}{P(e_1, e_2)} \end{aligned} \quad (4)$$

Therefore, the first sets of numbers are sufficient for the calculation.