2: A and B are independent events for which $P(A \cup B) = 0.9$ and $P(A) = 0.8$. Compute $P(B)$.

2 { $P(A \cup B) = P(A) + P(B) - P(AB)$

2 { $0.9 = 0.8 + P(B) - 0.8\,P(B)$

$0.1 = 0.2\,P(B)$

$\frac{0.1}{0.2} = P(B) = \frac{1}{2}$ 1

3: Gilbert will ask either Jill or Angie to the Tri-Phi house dance. He likes Jill more so there's a 2/3 chance he will ask her out instead of Angie. If Gilbert asks Jill there is a 1/4 chance she will accept. If he asks Angie there is a 3/4 chance she will accept. Suppose Gilbert succeeds in getting a house dance date. Compute the probability he asked Jill.

$$P(J|S) = \frac{P(S|J)\cdot P(J)}{P(S|J)\cdot P(J) + P(S|J^c)\cdot P(J^c)}$$

Bayes approach: 2
correct use: 2
calc: 1

$$= \frac{\frac{1}{4}\left(\frac{2}{3}\right)}{\frac{1}{4}\left(\frac{2}{3}\right) + \frac{3}{4}\left(\frac{1}{3}\right)}$$

$$= \frac{\frac{2}{12}}{\frac{2}{12} + \frac{3}{12}} = \frac{2}{5}$$