HW1

1. $P(2B \mid \text{Underperform}) = 5\%^2 = 0.25\%$

$P(2B \mid \text{In-line}) = 50\%^2 = 25\%$

$P(2B \mid \text{Outperformer}) = 70\%^2 = 49\%$

2. $P(2B) = 0.25\% \times 10\% + 25\% \times 80\% + 49\% \times 10\%$

$= 24.925\%$

3. $P(\text{Underformer} \mid 2B) = \dfrac{P(2B \mid \text{Underformer})\,P(\text{Underformer})}{P(2B)} = \dfrac{0.25\% \times 10\%}{24.925\%}$

≈ 0.001

$P(\text{In-line} \mid 2B) = \dfrac{P(2B \mid \text{Inline})\,P(\text{Inline})}{P(2B)} = \dfrac{25\% \times 80\%}{24.925\%} \approx 0.802$

$P(\text{Outperformer} \mid 2B) = \dfrac{P(2B \mid \text{Outperformers})\,P(\text{Outperformer})}{P(2B)}$

$= \dfrac{49\% \times 10\%}{24.925\%} = 0.197$