1. A spam filter is designed by looking at commonly occurring phrases in spam. Suppose that 80% of email is spam. In 10% of the spam emails, the phrase “free money” is used, whereas this phrase is only used in 1% of non-spam emails. A new email has just arrived, which does mention “free money”. What is the probability that it is spam?

**Answer:**

A: The event email is SPAM

B: The event of email has free memory space

P(A/B) = P(B/A) \* P(A) / P(B)

P(A/B) =80/82 = ~0.97