

1. Suppose a company has two factories, Factory  $A$  and Factory  $B$ , that produce 60% and 40% of its products, respectively. Factory  $A$  produces 2% defective products while Factory  $B$  produces 3% defective products. If a defective item is drawn at random, what is the probability that it was produced by factory  $B$ ?
  
2. Two dice are rolled. Let:
  - $A$  = "Sum of two dice equals 3."
  - $B$  = "Sum of two dice equals 7."
  - $C$  = "At least one of the dice shows a 1."
  - (a) What is  $P(A|C)$ ?
  - (b) What is  $P(B|C)$ ?
  
3. A student is given a multiple choice exam with 10 questions, each question with five possible answers. This student guesses randomly for each question.
  - (a) What's the probability this student gets exactly 6 questions correctly?
  - (b) What's the probability this student gets at least 6 questions correctly?