

MATH 107/CCE

Practice Problems Spring 2003

University of Rhode Island

Instructor: Dr. M. Kulenovic

02/28/2003

1. A plant manufactures microchips, 4% of which are defective. The plant makes a profit of \$12 on each good microchip and loses \$45 on each defective one.

(a) What is the expected profit on a microchip ?

(b) The plant plans a production run of 10,000 microchips. What is the expected profit for the run ?

(c) If the profit on each good microchip is increased to 20, find the expected profit on a microchip.

2. In a sample space, events A and B have probabilities $P(A) = .75$, $P(B) = .40$, and $P(A - B) = .45$.

(a) Calculate $P(A \cap B)$.

(b) Are A and B independent ? Explain.

(c) Calculate $P(A \cup B)$.

3. A supplier purchases 75% of its parts from the factory A and 25% of its parts from the factory B . Five percent of A 's parts are defective and 7% of B 's parts are defective.

(a) What is the probability that a randomly selected part is not defective ?

(b) What is the probability that the selected defective part was produced in the factory A ?

4. In a certain population of voters, 70% of Democrats, and 42% of the Republicans favor the tax increase. The voters are 60% Democrat, and 40% Republican.

(a) Draw a tree diagram to visualize the problem.

(b) A randomly chosen voter does not favor the tax increase. What is the probability that the voter is a Democrat ?

(c) A randomly chosen voter favors the tax increase. What is the probability that the voter is a Republican ?