
Name: ______________________    December 9, 2008

Problem 1: ____ /18
Problem 2: ____ /16
Problem 3: ____ /16

Total: ____ /50

Instructions: The exam is closed book, closed notes and calculators are not allowed. You are only allowed one letter-size sheet of paper with anything on it.

You will have 30 minutes for this test. The point value of each problem is written next to the problem - use your time wisely. Please show all work, unless instructed otherwise. Partial credit will be given only for work shown.
Problem 1. What is the probability that a seven-card poker hand contains:
(a) four cards of one kind and three cards of a second kind?
(b) pairs of each of three different kinds and a single card of a fourth kind?
(c) a flush (all cards of the same suit)?
Problem 2. Which is more likely: rolling a total of 8 when two dice are rolled or rolling a total of 8 when three dice are rolled? (You should give a rigorous proof, by computing the probabilities involved.)
Problem 3. There are three cards in a box. Both sides of one card are black, both sides of one card are red, and the third card has one black side and one red side. We pick a card at random and observe only one side.

(a) If the side is black, what is the probability that the other side is also black?
(b) What is the probability that the opposite side is the same color as the one we observed?