HOMEWORK 9 - MATH 111

DUE DATE: Monday, April 19

INSTRUCTOR: George Voutsadakis

Read each problem very carefully before starting to solve it. Each question is worth 1 point. It is necessary to show your work. Correct answers without explanations are worth 0 points.

GOOD LUCK!!

1. At a pow-wow in Arizona, Native Americans from all over the southwest came to participate in the ceremonies. A coordinator of the pow-wow took a survey and found that 15 families brought food, costumes and crafts, 25 families brought food and crafts, 42 families brought food, 20 families brought costumes and food, 6 families brought costumes and crafts but no food, 4 families brought crafts, but neither food nor costumes, 10 families brought none of the three items, 18 families brought costumes but no crafts. Find (a) how many families were surveyed and (b) how many families brought crafts but no costumes.

2. Suppose that $n(A) = 54, n(A \cap B) = 22, n(A \cup B) = 85, n(A \cap B \cap C) = 4, n(A \cap C) = 15, n(B \cap C) = 16, n(C) = 44, n(B') = 63$. Draw a Venn diagram and use the information to fill in the number of elements for each region.

3. Write an appropriate sample space for the experiment of tossing a fair coin four times. Give the event "an odd number of heads appeared". Then find the probability of that event.

4. Consider the experiment of rolling a pair of fair dice. How many outcomes are there in the sample space S? Write formally the event "the sum of the numbers showing is 7". What is its probability?

5. A card is drawn from a well-shuffled deck of 52 cards. Find the probability that the card is (a) a jack (b) a red 7 (c) a diamond or black

6. George found that 85% of his students in his math class had passed algebra, 60% had passed geometry and 55% had passed both courses. Find the probability that a student selected randomly from George's math class has passed at least one of the two courses.

7. Two cards are drawn without replacement from an ordinary deck of 52 cards. Find the probability that one is an ace and the other is a 7.

8. Consider the experiment of rolling a pair of fair dice. Show *formally* that the events "the first die shows an even number" and "the second die shows 3 or 5" are independent.